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**DETERMINANTS OF INFANT FEEDING PRACTICES: A PRELIMINARY
ETHNOGRAPHIC STUDY IN RURAL NIGERIA**

by

SABA MEBRAHTU

A Thesis Submitted
In Partial Fulfillment of the Requirements for the
degree of Master of Science
Major in Nutrition and Food Science

1989

**DETERMINANTS OF INFANT FEEDING PRACTICES: A PRELIMINARY
ETHNOGRAPHIC STUDY IN RURAL NIGERIA**

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by
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This thesis is approved as a creditable and independent investigation by the candidate for a degree, Master of Science, and is acceptable for meeting thesis requirements for this degree. Acceptance of this thesis does not imply that the conclusions reached by the candidate are necessarily the conclusions of the department.

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sbm

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Chapter I. INTRODUCTION

This thesis examines qualitative data on cropping systems (crop production, processing, and marketing), intra-household dynamics (gender labor allocation and decision making), and infant feeding behaviors (perceptions of infant nutrition and health, and infant feeding practices). This report is based on a three-month ethnographic assessment of 54 households and 18 key informants. It is the preliminary phase of a seven-month, semi-longitudinal, quantitative project investigating relationships between cropping patterns, household time allocation, and infant nutrition. This preliminary ethnography was undertaken by the author and two field assistants, from February to April, 1987, in rural Oyo and Kwara, Nigeria.

Problem Statement

Infant mortality is high in Nigeria. In 1984, the Federal Ministry of Health estimated that out of every 1,000 births, 120 died in infancy, before the age of one. According to the United Nations Fund for Children (UNICEF), of the 4.7 million children born in Nigeria yearly, no fewer than 500,000 will die before they are one year old, while 900,000 will not reach 5 years of age (Momah et al., 1987). The situation is not improving, "infant mortality is...on the increase...the

rate of reduction of infant mortality has slowed, as has progress in fighting infectious killer diseases and in improving schooling and basic nutritional needs" (Power, 1988).

The direct causes of child death, according to UNICEF records, include whooping cough (pertussis), neo-natal tetanus, polio, tuberculosis, and diphtheria, collectively responsible for at least 108,000 deaths every year. Malnutrition is a major contributing factor, as either the cause of health problems or as the result. "Changes in food habits," making "industrial baby foods a status symbol even among disadvantaged women...has aggravated the state of malnutrition of the Nigerian child..." (Nzeribe and Ogunsakin, 1988). The Nigerian Federal Ministry of Health estimates that at least 120,000 children under five years die from improper or insufficient diet (Momah et al., 1987).

Cropping patterns are a major determining factor for household time allocation, since crop production is the primary occupation, particularly in the tropical forest regions of Africa. Cropping patterns vary in labor time and energy requirements (Longhurst, 1981), as well as in their output, economic and nutritive values. Adoption of different cropping patterns, therefore, affects rural households in three major ways:

- (1) household labor time allocation (for instance, crops requiring relatively more weeding, harvesting, and

transportation labor time, which tend to be women's work in many rural societies, will affect women's farm labor time, and vice versa);

(2) Crop and/or economic productivity (adoption of high-yielding improved seeds, irrigation schemes, and crops with high economic return, "cash crops," will affect total crop output and monetary return); and

(3) food nutrient availability (for example, adoption of food crops that lack limiting nutrients such as amino acids is crucial in the case of infant nutrition).

It has been well established that increasing household agricultural and economic productivity will not necessarily translate to improving household welfare (Dewey, 1981, 1980, 1979; Fleuret and Fleuret, 1980; and Longhurst, 1983, 1981a, 1981b). This is probably due to: (a) negative effects on (1) and (3) most likely cancelling out any positive effects on (2); and/or (b) monetary gain being misallocated (not used to purchase the limiting nutrients), especially if the technology is gender-biased and misdirected.

Weaning infants are more sensitive than any other household member to slight changes in household agricultural production, processing, and marketing systems, in gender labor/resource allocation and decision making, and in perceptions of infant feeding and health. Directly or indirectly, these major factors all affect infant feeding and infant care. Studying infant feeding practices within the

broad context of farm household systems is, therefore, imperative. "Emphasis" needs to be "on a 'holistic', multi-faceted approach, seeking to examine complex inter-relationships of food use or nutritional status in the context of specific human communities" (Pelto, 1981).

Many authors have researched the multi-faceted determinants of infant feeding practices but few have attempted to examine these factors comprehensively (Laukaran et al., 1981). Popkin et al. (1979) postulated a model of infant feeding decisions emphasizing the importance of socioeconomic factors which are potentially mutable and organized according to community and individual observations. Laukaran et al. (1981) proposed a more comprehensive framework suggesting that key infant feeding decisions be examined in the context of the knowledge experience, and attitudes which affect them. Their aim was to identify the social, economic, environmental, and biological factors which influence the mother's decision making and, hence practices. The proposed model included biomedical, health service, women's employment, and marketing factors. But they did not consider an important factor; crop production and cropping patterns for household time and food availability, which affects both infant feeding and caretaking. Longhurst (1981a) made the pioneering effort making linkages between cropping patterns, women's work, family nutrition and child care. But, infant feeding practices, "a prerequisite to understanding the factors

related to infant nutrition" (Esterick, 1983), was not one of the issues considered in his study.

Objectives of the Study

This preliminary ethnography had a major objective of providing descriptive information on a broad range of agricultural, socioeconomic, health, and behavioral factors for infant feeding practices. More specifically, the main aim of the ethnography was to provide detailed qualitative information on the following three research issues as major determining factors for infant nutrition:

- (1) household agricultural production, processing, and marketing systems;
- (2) intra-household dynamics - gender labor allocation and decision making processes; and
- (3) infant feeding behaviors - perception of infant feeding and health and infant feeding practices.

Chapter II. THE RESEARCH SETTING

Geographic Location

Nigeria lies between latitudes four and 14 degrees North. It is bordered in the north by the Sahel and in the south by the Gulf of Guinea. According to the 1953 census there were more than 200 ethnic groups in Nigeria, most of whom have distinct customs, traditions and languages.

Ethnic Distributions

The peoples of Nigeria can be classified as living in three major geographical areas, the forest, the middlebelt guinea savanna, and the savanna. The large and politically dominant ethnic groups include Hausa (16 million), Yoruba (ten million), Igbo (seven million), and Fulani (five million) (Ikime, 1980). The largest ethnic group of the forest belt are the Yoruba and Endo who live in the southwest or western states of Nigeria.

This study focuses on the Yoruba in Oyo and Kwara states of Nigeria. The Yoruba are concentrated in the Ogun, Oyo, Ondo, Kwara, and Lagos states (see map in Appendix I). Although they are predominantly engaged in agriculture, they have a unique and longstanding tradition of living in large towns, the largest of which include Ibadan (627,380), Ogbomosho (319,880), Oshogbo (210,380), Ilorin (218,550), and

others (1963 Census). The Yoruba are the most urbanized group not only in Nigeria but throughout the African continent (Ikime, 1980).

Yoruba Women

Yoruba women are well known as traders within the internal marketing system of Nigeria. According to Sudarkasa (1973), there is no special class of women in Yoruba society that can be termed "traders." Virtually all women are engaged in some type of trade activity. She said, "trading is regarded as part and parcel of a Yoruba woman's role which includes first of all the roles of wife and mother. It is expected that by means of their trade activities, women will make some contribution to the spheres of their families." Earlier literature (Sudarkasa, 1973; Fadipe, 1970; Lloyd, 1955) indicated that women rarely participated in any phase of agriculture, with exceptions of a few parts of Yoruba land where they participated in some phases of farm work. However, currently there is an indication that Yoruba women are more actively involved in farming, at all agricultural production stages, especially in Oyo where the surveys of three studies were done: Cashman (1987); Spiro (1980); and Ikpi et al. (1986). Yoruba women in Kwara, based on our ethnographic observations, were actively engaged in weeding, harvesting, threshing, and transportating of agricultural products. But they were increasingly acquiring farm plots (generally from

their husbands) and thus taking up more farm responsibilities.

Religions of the Yoruba

The traditional religion of the Yoruba, Olorisha, remained completely insulated from the influence of Islam with the exception of Kwara. In the early 19th Century, Ilorin, the capital city of Kwara, was captured by the Fulani king and Islam became the predominant religion. In the rest of the Yoruba-speaking states (Oyo, Ogun, Ondo, and Lagos), Christian missionaries were able to penetrate and influence the communities. The major consequential difference between the two regions, generally acknowledged, is the relatively greater number with formal education in the region that was influenced by Christianity (Ikime, 1980).

There is very little data available determining the differences between the two regions on women's participation in agriculture, child care, and feeding practices. The few available studies are in the area of breastfeeding patterns. Isiugo-Abanike (1986:18) found that "with regard to religion, Christians generally have shorter duration of breastfeeding than non-Christians...even women in traditional religion breastfeed for a shorter duration than Muslim women who breastfeed on average, for about 19 months, and fully for 6.3 months. The length of breastfeeding for Muslim women is more than five months longer for Catholic women of the same age and more than two months longer for full breastfeeding."

Similarly, Orwell and Murray (1974) suggested "there were apparent religious differences: Muslim mothers being more likely to breastfeed exclusively (29%) than Christians (16%)..."

The Ethnographic Field Sites

Ladua and Ago. The first ethnographic site consisted of two villages, Laduba and Ago, which are more or less sister villages. They are approximately 30 km from Ilorin and about one to two km from each other, with an excellent road linking them to Ilorin. Small buses serve the public with transportation to the major urban center and other surrounding rural communities. Their combined population is over 2500 (1986 DMD census), predominantly Islam in religion, and Yoruba speaking. Only 15 percent of the population is Fulani by origin, and for the most part (up to 97 percent), the population is, according to the Ilorin Agricultural Development Program's (IADP) records, engaged in agriculture.

The villages are located in the derived or guinea savanna, a transition zone between "the root crop/oil palm/cocoa belt of the south and the sorghum/millet/cotton/groundnut belt of the northern states" (Okigbo, 1978:12). In other words, between the forest in the south and the savanna in the north. And since the middlebelt is a mixed grain/root crop zone it is recognized for its multiplicity of crops (Kowal and Kassam, 1978). For this reason, Diehl (1982:21)

believed, "more attention has been paid to the potential of the middlebelt which constitutes areas of sparse population and holds great promise for rural food production, employment opportunities, handsome farm income and substantial net immigration." The annual rainfall varies between 1200 to 1300 mm. In large parts of the middlebelt, the rainy season begins in April. This marks the beginning of intense planting operations. There are two rainfall regimes separated by a short August drought in parts of the middlebelt. Therefore, two crops of maize are generally grown. Some food crops such as yams are grown early in the wet season and depending on variety, mature before or by the end of it. Others such as cowpeas and soybeans, which require shorter growing periods, are planted only after the short August drought, to avoid high insect infestation during the long wet season, and to take advantage of sunny weather from October to November ensuring adequate drying of the crops (Agboola, 1979).

The natural vegetation in the area of study is the typical open forest of the mixed leguminous wooded savanna. The slopes and hilltops which define the landscape often are covered by woodlands and vegetation of trees and shrubs interspersed with short grasses. Some economic trees such as shea nut (Butyrospermum paradoxum) and locust bean (Parkia clappertonia) are common.

The area, in general, is moderately suitable for the cultivation of yams, cassava, sorghum, maize, sweet-potatoes,

tobacco, millet, cotton, groundnut, legumes (such as cowpeas and soybeans), and cashew. According to Dawtry's (1983) analysis of the region's satellite imageries, 60 percent of this land area is utilized for agricultural production.

There is a primary school in Laduba, which serves the surrounding villages as well. Laduba has an Agricultural Development Program (ADP) office, with an extension officer residing in the village. ADP has been able to organize an Agricultural Cooperative Society in the community. Markets are held in Laduba every five days and none in Ago. The crops traded are yam, maize, sorghum, cassava, melon, shea nuts, locust beans, and to some extent groundnuts, and a few vegetables.

Electricity was in the process of being established during two-year residence. There were two UNICEF "bore holes" (wells) in Laduba but neither was in good operating conditions. The community had no potable water or sanitation, and no formal health care. Laduba especially relied heavily upon Asa river for its water uses.

Kersey Children's Clinic. The second ethnographic site, Kersey Children's Clinic, is located on the outskirts of Ogbomosho, six km off the main road. It was founded by Miss Kersey and served as an orphanage until 35 years ago, when Miss Ruth Womack arrived. Kersey's role was changed to a child health clinic. The clinic is part of the Southern

Baptist Mission at Ogbomosho, which is the biggest mission outside the USA, and has been operating at Ogbomosho since the beginning of the century (Walker, 1985; Pinney, 1986). There is in addition to the clinic, a seminary and a hospital. This makes Ogbomosho unusual in that there has been such a long consistent presence of missionaries. This is reflected in the ample number of Baptist churches in the town of Ogbomosho and in the neighboring villages.

The clinic takes both inpatients and outpatients, operating as an outpatient clinic two days a week, Mondays and Thursdays. In 1984, the clinic had more than 24,000 outpatient visits (Rusell, 1985; Walker, 1985). Based on figures for 1984-1985, there are about 550 patients that stay at the clinic in a year. There is a marked seasonal variation in the number of both in and out patients attending the clinic. The peak admittances are June/July. This is the well documented 'hungry season,' especially for West Africa and Bangladesh (Chamber et al., 1979; Chambers, 1983; Tomkins et al, 1986; Chen et al., 1979, Brown et al., 1982). It is just before the first harvest of the year, hence food stocks are low, and at a time when the demand in farm labor and the rates of infections are at their peaks.

Children that are admitted as inpatients are often seriously malnourished and need intensive care and feeding. The average period of stay at the clinic is about a month, but varies with the individual cases. The children are closely

monitored. Body temperatures and weights are measured daily. They are frequently and regularly fed, every two to three hours, with high nutrient/energy dense foods. One of the new food elements recently introduced is soybean. Soymilk and traditional soy-fortified weaning foods such as soyogi and soytuwo were introduced as the cheapest source of high quality vegetable protein (see Appendix III and IV for description of these foods). Foods offered at the clinic include eggs, beans, soytuwo, soymilk, soyogi, rice, fruits, kulin kulin, and vegetable soups. Medications, such as antibiotics, Oral Rehydration Salts (ORS), vitamin and mineral supplements are given when necessary.

The International Institute of Tropical Agriculture (IITA) in collaboration with Kersey Children's Clinic has developed an integrated intervention scheme. IITA/Kersey's intervention strategy addresses simultaneously agricultural, nutrition, and health issues. The mothers are taught during the course of their stay: (1) how to cultivate the 'new' crop, soybeans; (2) how to cook soy fortified foods; and (3) how to best care and feed their children. The clinic has developed a reputation, over the many years that it has been in operation, as being the "place where they make babies better" (Pinney, 1986).

Kersey Ex-inpatients. For the third ethnographic site, postclinic village setting, Kersey ex-inpatients were traced

in six villages. Inpatients came predominantly from nearby surrounding villages. The six villages were classified into two three-village groups. The first group of villages, Baba Ode, Oda Oba, and Iluju, were fairly large in population size with big market trading centers, hence attracting traders from the surrounding areas, and providing the women in the community an opportunity for expansive income-generating activities (gari processing and marketing is one of the major income-generating activities for the women in all the three villages). The villages in the second group, Ladokun, Idioro, and Temidire, were smaller. They did not have a major trading center, and had apparently very little outside influence except for the Baptist mission's community health outreach program. The two groups of villages were within ten to 15 km off Ogbomosho.

Detailed information on the ecology and organization of households and compounds in rural Oyo was not gathered during the ethnography at the clinical and postclinical village settings. Relevant data was gathered for Laduba and Ago to design the second quantitative phase of this research project which will be presented in subsequent publications.

The cropping systems in the derived savanna zone, where the villages under study are located, traditionally are based on yam. Intercropping is a common feature of agriculture in the region. Specific intercropping systems have developed over the centuries, closely adapted to the prevailing ecological and socio-economic conditions (Steiner, 1982). Farmers have many reasons for practicing intercropping. Higher yields are only one of these. Labor time requirement is a major factor, especially for farmers who have to rely on hired labor, at least for the peak seasons (Swindell, 1985). The most return per person hour is more important than the return per unit area. Diehl (1981), when studying yam-based cropping systems in the southern Guinea Savanna of Nigeria, was able to show that farmers spread their labor requirements efficiently by practicing different mixed crop enterprises.

Women's Work, Decision Making, and Infant Care

Women's "work burden and drudgery" (Beneria, 1982) in traditional societies is now well documented. In Boulding's (1977:111) words, "...women carry out their productive roles, referred to as the Fifth World, which is found in every continent: the family farms, and the kitchen gardens, the nursery and the kitchen...women breed babies, produce milk to feed them, grow food and process it, provide water, fuel and clothing, build houses, make and repair roads, serve as beasts of burden, and sit in the markets to sell the surplus." Yet,

Chapter III. LITERATURE REVIEW

Cropping Patterns and Labor Time Requirements

The amount of time farmers spend on crop production is almost completely unknown (Steiner, 1982). Although, in the last few years limited research has appeared on household time allocation, particularly looking at women's participation in agriculture. For instance, Ikpi et al. (1986) were able to provide, from their field survey in Oyo Local Government Area, household (disaggregated by age and sex) time spent on all phases of cassava production, processing, and marketing. Ekpere et al. (1986) compiled data, with more extensive coverage, in five Nigerian states, on percentage labor input contribution of females and males in cassava production and processing activities. Some rough estimates exist about the labor requirements of major food crops under traditional cultivation in Nigeria (Table 1).

Table 1. Approximation of Yield and Labor Requirements of Major Food Crops Under Traditional Cultivation in Nigeria

Crop	Yield tons/ha	Labor Req. man-day/ha	Calories/ 100 grams	Mcal Av. per ha	Man-days per Mcal
Yam	5-18	370-600	90	4.5-16.2	46.9
Cassava	8-25	200-230	109	8.7-27.3	11.9
Maize	1.2-2.0	110-130	360	4.3-7.2	20.9
Sorghum	0.7-0.8	150-280	345	2.4-2.8	73.1

Source: Diehl (1982:5)

although the broad outlines of women's activities in rural Africa are well known, the amount of time women actually spend on their numerous activities is less well documented (Spiro, 1980).

Also, it is extremely important to know what other household members are contributing in terms of productive and household activities, especially if that contribution influences household decision making patterns and infant nutrition (Bennet, 1983). Spiro (1980:23) found that there was an overlap in men and women's household division of labor in the villages she studied in Oyo state; "although Yoruba culture defines 'ideal' areas of domestic responsibility for both men and women, an overlap was found in some areas. Although women carried out almost all domestic chores, men and children were seen to be helping with cooking, washing clothes, water and wood collection, and child care. In turn, women contributed substantial amounts of time to family activities on their own and their husband's farms." Unfortunately, no comparable data was collected to show how that, in fact, influenced decision making patterns and most importantly, infant nutrition.

Women's competing demands on labor time has been a neglected area of study and consequently available data is fragmentary and incomplete. Currently, detailed household studies including data on women's workload (time use and, in few a cases, seasonal migration patterns) and their household

income contribution have emerged. These studies still lacked the complementary data on child health and nutrition, household decision making, did not control for age of the child, and did not disaggregate household income by gender and sources (Bennet, 1983; Leslie, 1987; Nieves, 1981; Myers, 1986; Brieger, 1984; and Buvinic et al., 1987). Walker's (1985) study of Kersey Clinic, for instance, showed that women who claimed to be farmers had higher rates of infant death. Decision making processes were not examined, and socioeconomic status was not controlled for.

In view of the fact that most women who are mothers of young children are doing economically productive work as well as child care and household work, empirical information on how young children are cared for while mother is employed is scarce and scattered (Joeques, 1987). In order to examine the effects of women's work on child welfare we must examine the effects of alternate care systems on the child (Engle, 1981). As Wesner and Gallimore (1977) point out, "nonparental caretaking is either the norm or a significant form of caretaking in most societies." However, "socialization research rarely takes this into account." Therefore, information on seasonality and sociology of child care is sparse. The few exceptions (Munroe and Munroe, 1971; Uyanga, 1980; Odebiyi, 1985) did not systematically take into account the child's age and the seasonality factor.

Infant Feeding and Caretaking Practices

Inadequate child care and feeding practices have historically been accepted to be due to the "ignorance" of the mothers (McDowell, 1976). In the last few years especially, "maternal education has been identified by various researchers as the single most important variable explaining variations in most demographic phenomena in developing countries, including fertility, childhood mortality, migration..." (Isiugo-Abanike, 1986:19). But, as Huffman (1985) suggests, "while this may be true for women who are better off economically, the competing demands on the poor mother's time that prevents appropriate child care has not been recognized. Poor mothers who have no choice but to work, have to balance it with their child care and other household work."

The Gambian studies have especially shown that seasonal incidence of infectious disease coincide with shortages of food, the rains, and heavy agricultural labor demands so that "the care and feedings of infants and young children is left to siblings and grandparents in the family compounds...and in some cases this may result in lower standards of child care" (Tomkins et al., 1986:1,10). Most importantly, "how children respond to infection is bound up with the way in which they are fed and cared for" (Thompson, 1967:124).

The great nutritional and epidemiological dangers of declining breastfeeding period, and uptake of bottlefeeding

is now well documented (Jelliffe, 1962; Cresencio and Herbert, 1987; WHO, 1981; and Isiugo-Abanihe, 1986). Maternal workload and/or employment is the well cited determining factor (Nerlove, 1974; and Mgaza and Bantje, 1980). However, as Esterik and Greiner (1981) argued, the factor is rather "formal employment in urban and urbanizing areas that has been seen as incompatible with breastfeeding." In traditional rural settings, women's work is nearly always compatible with breastfeeding and child care.

Woolfe et al. (1977), in their Ghanian study, identified three major constraints on the energy intake of infants and young children: (1) frequency of feeding; (2) energy density of foods offered; and (3) amount of food the child is able and willing to consume in one meal. Therefore, the recommendations were for mothers to actively encourage the child to eat and value high-fat as well as protein foods. The traditional mode of feeding, called forcefeeding, handfeeding, or dala gbala in Yoruba, which has been discouraged by health practitioners as causing respiration pneumonia in children (Odebiyi, 1985), may indeed have been a positive deviant infant feeding behavior. Relatively more nutrients may be consumed by "forcing in" more than the amount the child is "willing to consume in one meal." Empirical data contesting or supporting this hypothesis is, unfortunately, nonexistent.

Chapter IV. METHODOLOGY

Multiple Ethnographic Sites

This preliminary ethnography was carried out in multiple sites in order to assess and document ecological and behavioral variations, and to relate findings to ongoing research and development projects. The three field sites were: (1) Laduba, and Ago, Kwara State, where the second phase of this research project was conducted, and the longitudinal study of the Dietary Management of Diarrhea (DMD) project, reported in Brown et al. (1986), was underway; (2) Kersey Children's Clinic, Ogbomosho, Oyo State, where IITA's Soybean Production and Utilization Intervention project had been implemented, reported in Walker (1985), Pinney (1986), Mebrahtu and Hahn (1987); and (3) six villages, Ladokun, Iluju, Odo Oba, Idioro, Temidire, and Baba Ode, all within ten to 15 Km radius of Ogbomosho, as a follow up study of Kersey's ex-inpatients, initiated by Pinney (1986).

Instruments

The ethnography was conducted following Ethnographic Guides (see Appendix II) designed by the author (Mebrahtu, 1987) and by Bentley (1986). The ethnographic guides addressed the following research issues: household agricultural production, processing, marketing patterns;

household labor allocation, and decision making; perceptions of infant feeding and health; and infant feeding practices.

The interview guide was divided into four sessions. The unstructured interviews focused on both male and female members of the household (mother and father of the target child). Each interview session lasted about 60 to 90 minutes. The study households were visited once every three days. A total of four visits were made per household. The men and women were interviewed separately and, whenever possible, together in one of the sessions. The first session was on agricultural production, processing, and marketing systems, and household labor allocation; the second was on infant feeding practices (breastfeeding and weaning) and perceptions of infant nutrition and health; the third was on perceptions of seasonality and child illness; and the fourth was on household decision making.

Entry Into the Field Sites

Entry into Laduba and Ago was made in collaboration with the Project Coordinator of the DMD Program, from the University of Ilorin. The process included several visits and meetings with leaders at the local government and village levels. Similar entry was made in the six villages around Ogbomosho in collaboration with IITA/Kersey Cilinc's outreach program.

Sample Selection

Laduba and Ago. Thirty-one village compounds and their household members were first identified and recorded at Laduba. Then a rapid household socioeconomic assessment was done on the basis of wealth proxy variables, household material possessions such as radio, bicycles, kerosene stoves and other. Little intracompound socioeconomic variation was found. Therefore to avoid a clustering effect only one household was selected per compound. The average number of households within a compound was 10.7, and the range was 1 to 43 household(s) per compound. A compound includes a collection of apartments for individual families, known as agbo ile in Yoruba (lit., a flock of houses). A family, consisting of wife or wives, husband, and children, would live under the same roof, and in the compound of the husband's extended family (Fadipe, 1970). Twenty compounds and one household per compound were randomly selected in Laduba. In Ago, five households out of the 16 village compounds were selected using the above sampling method. A total of 25 households were thus interviewed in both Laduba and Ago.

The key informants were selected to represent different community leadership (religious, agricultural, and traditional medicine, and 'formal,' elementary education), households in the low and high socioeconomic status, older and younger generations. A total of five women and five men were selected from Laduba, and two women and three men were from Ago. The

key informants ranged, in age, from 23 to 57, and had children or grand-children aged six to 72 months. Contextual data on general modes of behavior was obtained from the key informants. They were interviewed generally to elicit information on 'traditional' practices and the dynamics of social change, religion, feeding habits, and agricultural practices.

Kersey Children's Clinic. There were 28 mothers/guardians attending Kersey Children's Clinic out of which 15 were randomly selected. Children were mainly brought to the clinic by their mothers although where a mother was absent or dead a substitute "guardian" accompanied the child. Five mothers said they were farmers by profession, thus they were the only ones who were interviewed about agricultural production systems. At least three interview sessions were conducted with each of the mothers, every three days, for a total of two weeks. Three key informants were selected, one IITA extension worker who had been actively involved in the clinic's outreach program, a nurse aid, and a registered nurse. The key informants were interviewed to illicit information on the history and development of IITA/Kersey's Intervention Scheme.

Kersey's Ex-Inpatients. A purposive sampling method was used in selecting ex-inpatients. Those that IITA/Kersey

agricultural extension staff, the project's national facilitator, regularly visited were selected for logistic reasons. It was more feasible to trace and locate them. Pinney (1986) faced similar problems in locating subjects for his quantitative survey of Kersey's ex-inpatients. He stated that it was extremely difficult to trace ex-inpatients for the addresses given were generally incorrect, people moved or migrated, or gave addresses of relatives at Ogbomosho. It was especially difficult to find more than one or two Kersey ex-inpatients in the smaller communities. Ten of the subjects interviewed were from villages in group one (relatively large population and intense marketing), and four were from group two. So the sample may be biased towards those who were more inclined to adopting Kersey's intervention schemes as they were more likely to participate in IITA/Kersey's outreach program, and less representative of ex-inpatients from the smaller communities.

Duration of Study and Residence in Field Sites

A total of three months was spent in field-site residence conducting the preliminary ethnography. During the first week, at Laduba and Ago, the author and field assistants resided in rented rooms located at the center of the village, in front of the market. This was done in order to observe and participate in the extensive social and trading exchanges common to Yoruba village markets. The following two weeks

were spent in another house located in the outskirts of the village, "removed" from the center of the villages. During the latter time more extensive open-ended interview sessions were carried out.

During the Kersey-based ethnographic study, the author and field assistants resided at Ogbomosho. The residence was at the premises of the Baptist mission hospital, in order to obtain historical and ethnographic information on the mission's village community health and nutrition intervention work.

Finally, during the Kersey ex-inpatient follow up study, the author and field assistants commuted to the six villages from Ogbomosho. The unstructured interviews were completed in two weeks.

Data Analyses

Data analyses included classification and tabulation of ethnographic notes. The author completed ethnographic analyses by the end of the third month. The findings were used to design the longitudinal second phase of this project, and to code the quantitative research instruments.

Chapter V. CROPPING SYSTEMS

All the households interviewed at Laduba and Ago were engaged in agricultural crop production whereas at Kersey only five of the mothers/guardians and ten ex-inpatients farmed. This chapter is therefore based on ethnographic assessment of the 40 farm households. None of the farm households were engaged in pure subsistence economy. Only three out of 25 at Laduba and Ago, two out of ten ex-inpatients, and none at Kersey, produced crops for consumption only. And, these farmers relied on other sources for cash income.

Household decision making processes are important to understanding the dynamics of farm household and cropping systems affecting child nutrition. But these processes are highly dynamic and complex and were examined closely in the second phase of this project. For the preliminary phase, open-ended questions were asked on three major areas of decision making: (1) crop production; (2) trading; and (3) child feeding.

Crops Most Commonly Grown

Crops most commonly grown in the villages under study were basically subsistence crops of which surplus was sold. Tobacco, predominantly grown in the area, may be considered a cash crop, although it was grown for both consumption and

sale. Only three of the the 25 farmers interviewed at Laduba and Ago grew tobacco. The farmers indicated that the economic return was not attractive and it was generally grown in the backyard. Tobacco was mainly a man's crop. They were responsible for its production and processing. At the clinic, the five women farmers interviewed did not grow tobacco, neither did the ex-inpatients of Kersey clinic.

All the 40 study households grew at least the four staple crops, yam, cassava, maize, and sorghum (Table 2). Very few (five at Laduba and Ago and two ex-inpatients) grew the staples only. The majority complemented the staples with either vegetables, legumes, or both.

Table 2. Crop Production Patterns

Cropping Patterns	Laduba/Ago	Inpatients	Ex-inpatients
Staples only	5	0	2
Staples+leg.	9	0	2
Staples+veg.	3	2	4
Staples+leg.+veg.	8	3	2
Total	25	5	10

All the food crops had some economic value. They were all sold in the local markets and therefore served as both food and cash crops. However, crops varied in 'economic,' and/or 'consumption' importance. They brought in varied amounts of monetary return; some crops were regarded to be

"better for the body and to eat" than others. However, Dewey's (1981, 1980, 1979) thesis that commercial 'cash' crops will affect food crop diversity may not apply to this region. The dichotomy between competing pure 'cash' and pure 'subsistence' crops was not clear-cut.

Farmer's Rankings of Food Crops

Yam. High regard for yam is the pattern for major parts of the middlebelt. Nweke and Winch (1980), from their study conducted in the eastern region of the middlebelt, found that 90 percent of the farmers in their survey villages ranked yam as the most important crop. The majority of the farmers in this study ranked yam highest (Table 3). The reasons given were as follows: "it is the king of food;" "good for the body;" "gives health, power, strength;" "brings plenty of money;" and "that's what the ancestors left us." A few ranked yam second while none ranked the crop third.

Table 3. Farmers' Ranking in Importance of Yam

Sites\Ranks	1	2	*NA	Total
Laduba and Ago	18	5	2	25
Inpatients	3	0	2	5
Ex-inpatients	7	2	1	10
Total	28	7	9	40

*Not Applicable, farmers did not give ranking

Very little detail is known about yam's contribution to

farmer's income. But Diehl (1982) found from his assessments that even though there was large variation between different regions, in large parts of the middlebelt, yam was the major source of income. Lagemann's (1975) and Lagemann et al.'s (1977) studies showed that yam contributed up to 32 percent of the farmer's gross income in former East Central State. Diehl (1982) also suggested that yam contributed 20 percent to the total daily caloric intake in rural areas in Nigeria, although there would be large seasonal variations, being much higher during the harvest period (September-January) and close to zero just before the new harvest begins (June-July).

Cassava. Relatively fewer farmers ranked cassava first (Table 4). However, cassava received the highest score as the second most important crop because "they relied on it when yam was finished," and it "was easier to store." And most important for cropping systems in the region, the farmers indicated that "cassava is becoming more important" and "yam is becoming more difficult to grow, since it has germination problem." The crop especially played an important role during the 'hungry season' (June/July) when all the yam and many other crops were depleted. Other researchers have also found indications that maize and cassava are gaining importance in the region, where historically yam and sorghum have played a major role in the cropping systems (Diehl, 1982, and Nweke and Winch, 1980), because, as Steiner (1982)

vice versa amongst the ex-inpatients. Although sorghum, according to the farmers, traditionally received a higher regard than maize, they acknowledged the higher economic importance of maize. They said, "maize brings in more money but sorghum is better for the body," and, "sorghum works well in the body."

Table 5. Sorghum Rankings

Rankings	Laduba/Ago	Inpatients	Ex-inpatients
1	2	0	0
2	5	0	0
3	10	1	3
*NA	8	4	7
Total	25	5	10

*Not Applicable

Table 6. Maize Rankings

Rankings	Laduba/Ago	Inpatients	Ex-inpatients
1	0	0	0
2	1	0	2
3	7	1	6
*NA	17	4	2
Total	25	5	10

*Not Applicable

Legumes, Vegetables, and Fruits. Nobody ranked legumes, vegetables, and fruits as high as any of the staple crops at Laduba and Ago. At Kersey, only one ranked tomatoes first.

suggested, they are easier to cultivate, store and transport. Another possible reason, yam is primarily men's crop and when men migrate to urban areas, the women remaining switch over to cassava and maize.

Cassava, interestingly enough, is more difficult to process than yam. So it would be important to note the gender time trade-off in production, storage, and processing of yam versus cassava, as well as household decision making dynamics associated with this shift in cropping patterns.

Table 4. Cassava Rankings

Rankings	Laduba/Ago	Inpatients	Ex-Inpatients
1	3	0	3
2	12	3	6
3	3	0	1
*NA	7	2	0
Total	25	5	10

*Not Applicable

Sorghum and Maize. Very few ranked sorghum first (Table 5). The crop was not seen as economically important. But it was regarded by tradition as "good food." The farmers said, "it prevents illnesses." None of the farmers ranked maize first (Table 6). Both crops received relatively low scores as the second most important crop (Tables 5 and 6). The majority of the farmers ranked both crops third.

Sorghum received a higher score as the third most important crop, particularly, at Laduba and Ago than maize and

Farmers especially showed disinterest in cowpea (two farmers abandoned, entirely, cowpea production). They said, "the crop had too many insect problems, consequently yields were very low, and sometimes, it did not yield at all." Consequently, "it did not bring in money." The crop, in other words, had relatively low economic return.

None of the farmers interviewed, at Laduba and Ago, grew soybeans. Very few (only two) showed some interest. Some of the farmers (five out of 25 farmers) had heard about it at a demonstration organized by IADP, at Offa, the previous year. A greater proportion (four out the five women farmers) at Kersey knew about soybeans. This is of course a reflection of IITA/Kersey's introduction and promotion of the 'new' crop. It is interesting, however, to note that the information did not always reach the husbands of Kersey's inpatients. Only three out of ten ex-inpatients learned about the crop from their wives. Six did not know about soybeans for they were never told by their wives after coming back from Kersey. And one heard about the crop, but not from the wife.

Backyard gardens were not common in Laduba and Ago. The main reasons indicated by farmers were: "water problems," according to five; "free roaming small ruminants (mainly goats) will destroy it," as indicated by two; "no time or space for a garden," as suggested by five; "did not know how," according to one; and one said, "the soil was not good enough." Only one had a garden but not in the backyard. It

was, however, common to intercrop the vegetables in the farm plots. Eight said that they had no separate garden but grew their vegetables in the farm. A greater proportion (four out of five) grew vegetables at Kersey, although only two out of the four women had separate gardens. The one woman farmer did not have a garden due to lack of water.

About half of the farmers (12 out of 25) at Laduba and Ago grew fruits, mainly cashew. The rest did not grow fruits because: four said that they did not have the time; four claimed that the soil was not good enough; and five did not own the land. Three of the five women at Kersey grew fruits. One of the women farmers did not cultivate her own land, so she could not grow fruit trees, and the other one did not know how. At Laduba and Ago, fruits were not a common sight. Above all, they were not considered as "food" because "they did not fill the stomach." Fruits could only be served as "refreshment." Those that grew vegetables and fruits did so for both home consumption and marketing. They sold fruits for cash, because of storage problems. The farmers said, "otherwise they will spoil and we cannot eat them all, when the fruits are in season."

Animal Husbandry

The livestock raised in the ethnography villages were primarily small ruminants (sheep, goats) and fowl (chicken). The farmers would not butcher these animals for household

consumption unless there was a special occasion, such as ceremonies, or if "visitors arrived from far away." The ruminants roamed freely in the villages, were non-dairy and scavenged for the most part. Women were responsible for animal husbandry. Hunting, on the other hand, was primarily the men's responsibility. The households relied heavily on "bush meat" (such as rabbits and a range of field rodents) as their major source of protein, especially, during the hunting period (dry season). A minute proportion (one out of 25) of households at Laduba and Ago owned cattle which were herded by the Fulanis (a predominantly nomadic group from the northern savanna region of Nigeria).

Land Tenure and Land Use

There was no landless class at Laduba and Ago. This is true for most of rural Nigeria (Whelan, 1982). Land is not a scarce resource, at least it is not the limiting factor. Practically everyone has a right to cultivate farm land. As shown in Table 7, the majority of the farmers at Laduba and Ago borrowed land. About half of those paid in kind, or gave ashakole in Yoruba, and the rest did not have to pay. Ashakole is more of a gift than land rent. The fee is usually not specified. The farmers generally found it "inexpensive," and "not a burden to pay, in kind or in cash." In comparison, about half of the farmers at Oyo borrowed farm land. Similarly, the farmers in this region did not make

payments; if they did it was a negligible amount, ashakole.

Men's Land Tenure and Use. Most of the men farmers cultivated more than one plot in Laduba and Ago (Table 8). The average number of plots cultivated per farmer (approximately 2.8) was lower than in Diehl's (1982) study villages, also located in the middlebelt guinea savanna, Kwara state.

Table 7. Land Tenure

Sites	Borrowed+pay	Bor.+no pay	Inherited	Total
Laduba and Ago	10	6	9	25
Inpatients	1	1	3	5
Ex-inpatients	3	1	6	10
Total	14	5	16	35

Note. Only women farmers were interviewed at Kersey.

Diehl found that, on the average, farmers cultivated three fields which were subdivided into six plots of 0.35 ha. But he also found that there was important differences between villages. Diehl suggested, "the split-up into fields and plots could be attributed to the different systems of land acquisition and tenure while the division into plots expressed the more diversified cropping pattern, which was done to the higher degree of soil differentiation, the wider range of crops grown and more flexible fallow and cropping practices."

Table 8. Number of Plots Cultivated by Men

Sites	1-3 plots	4-5 plots	more than 6	Average
Laduba/Ago	18	5	2	2.8
Inpatients	2	1	2	2.9
Ex-inpatients	7	3	0	2.8

Women's Land Acquisition and Use. About half of the women (13 out of 25) at Laduba and Ago, the majority of the ex-inpatients (eight out of ten) and in-patients (four out of five), acquired and cultivated plots. As discussed earlier, these discrepancies reflect regional differences among Yoruba women on their degree of participation in farming. The women generally acquired farm plots from their husbands.

Women did not generally grow yams (Table 9). It was traditionally regarded as "men's crop." Cassava (Manihot esculenta), cocoyam (Colocasea sp.), maize (Zea mays) and vegetables (a wide range amongst which include, Amaranthus sp., Cajanus sp., Curcubits sp., Esculentas sp., and Solanum sp. etc.) were, on the other hand, "women's crops." The same pattern of the dichotomization of crops into men's and women's, was observed in parts of Anambara state (Nweke and Winch, 1980). Nweke and Winch found that all production, marketing, and consumption decisions on yam were made by the man in the household. Similar decisions on cassava, maize, and vegetables were made by women to the extent that it did

not interfere with yam. Cassava and pepper were the most important for the women because of their high economic returns.

However, it is important to note some regional differences. Unlike our findings from Laduba and Ago, most of the women farmers who cultivated separate plots from their husbands at Kersey (three out of four) said that they grew same crops as their husbands. Whereas, on the other hand, amongst the ex-inpatients only one planted same crops as the husband.

Table 9. Women's Cropping Patterns

Cropping Patterns	Laduba/Ago	Inpatients	Ex-inpatients
Same as husband	5	3	1
Cassava only	3	0	2
Cass+veg etc.	4	1	3
Yams+veg.	1	0	1
Total	13	4	8

In general, women cultivated fewer plots than men in the the three sites. Four of the women farmers at Kersey cultivated two to three plots, while the husbands farmed two to seven plots. Although one woman farmer cultivated 20 small plots and the husband cultivated more. Seven of the ex-inpatients cultivated on to three plots, and three women farmed more than four plots. One explanation for these differences is that women were engaged in more additional activities than men. In addition to farming, the women

traded, 'fetched' (carried) wood, water, processed and prepared foods and did other household work.

Agricultural Inputs

Use of Fertilizers and Pesticides. The majority of the farmers preferred to use a combined soil management strategy of fertilizing and shifting cultivation (Table 10). However, the majority of women farmers at Kersey, in contrast, said they would shift. They found fertilizer application very expensive, which was also true for the farmers in the other two regions. The women farmers were more affected because they faced relatively more economic constraints.

Table 10. Soil Management Patterns

Soil Management	Laduba/Ago	Inpatients	Ex-inpatients
Shift Only	9	4	5
Fertilize only	1	0	1
Fert.+ shift	15	1	4
Total	25	5	10

Pest problems were evident but hardly any farmer could afford the high prices of insecticides. The majority in Laduba and Ago (22 farmers out of 25) said that they did not spray because it was too expensive. Only two sprayed although they found the prices too high, and one sprayed but did not complain about expenses. None of the farmers at Kersey used

pesticides. It was too expensive. Similarly, three of the ex-inpatients sprayed but also found it expensive. Six did not; they could not afford it.

Mechanization. There was very limited mechanization at Laduba and Ago. The farmers found tractors expensive and inappropriate for their small plots. The agricultural cooperative society had hired one from IADP the year before. But they were not sure if this practice would continue. The tractor was sold to private entrepreneurs who required higher rental fees. Human power, hoe, and cutlass were the primary means of farm production.

Labor Needs and Allocations. Labor was found to be the major constraint in the study villages. The farmers relied heavily on hired labor especially for land preparation. They all hired labor, at some point, in addition to family help (siblings, brothers, and spouses). Five farmers, at Laduba and Ago, said that they spent 600-1000 Niara per agricultural season, one spent over 1000, and nine spent less than 600. They all said that this was too expensive for them. But they had no choice since their children were not staying behind to help in the farms. Instead, their young adults went to the cities to look for jobs or to go to school. The women farmers at Kersey claimed they especially relied on hired help for land preparation. Four relied, exclusively, on hired labor,

but one obtained family help in addition. One woman hired labor for planting. Two hired help for weeding, harvesting and threshing, that is, in addition to family help. Only one ex-inpatient did not hire labor at all. He only grew two crops, cassava, and maize, since he had another occupation as an alternative source of income. Kwara women, at Laduba and Ago including those who cultivated their own farm plots, did not till the land, or weed. The husbands hired labor for them, or their sons helped. The women were primarily responsible for harvesting, threshing and transportation of crops. Oyo women farmers, on the other hand, were involved at all stages of farming. And after working on their own plots both Oyo and Kwara women helped their husbands which was not generally reciprocated.

Agricultural Extension Services

Agricultural extension services did not normally work directly with individual farmers. At Laduba and Ago, only two out of 25 were ever visited by an officer and they were both members of the Agricultural Cooperative Society which required high membership fees. None of the farmers at Kersey, and only two of the ex-inpatients, were visited by an agricultural extension officer. "Improved" seed varieties from the agricultural research centers did not reach individual farmers (only four at Laduba and Ago, none at Kersey and none of the ex-inpatients had received improved varieties).

At Laduba, seven out of the 20 farmers interviewed were members of the Agricultural Cooperative Society. The cooperative society acquired, from the village community, 200 acres of land. But, since the cost of clearing the land was too high, only 40 acres were cultivated. The cooperative society primarily grew maize, sorghum, cassava, and soybeans. The planting seeds were obtained from IADP, and the crops were sold back to the national marketing board. In other words, cash crop production was their primary motive. All members of the cooperative society cultivated, in addition, their personal farm plots, where subsistence crops were grown. There was only one female member and she joined the society by a special invitation. She belonged to the village head's compound and was identified as an influential personality in the village. She also cultivated her personal farm, and traded.

Other Sources of Income

Some of the men had multiple occupations (see Table 11). The secondary occupations included wage labor, and self-employment such as carpentry, blacksmith, driver, welding, etc. Compared to the other two ethnographic sites, Kwara (Laduba and Ago) men's primary occupation was farming. Women, as a rule, took on more work roles than men. In addition to farming, women traded and were entirely responsible for household production activities.

Table 11. MEN'S OCCUPATIONS

Sites	Farm only	Other only	Farm+other	Total
Laduba/Ago	15	0	10	25
Inpatients	7	6	2	15
Ex-inpatients	5	4	5	14
Total	27	10	17	54

Processing of Agricultural Products

Processing of fresh crops and animal products is primarily women's responsibility (Longe, 1985). There is, however, a big regional variation. At Laduba and Ago, for instance, most men (23 out of 25) helped in processing of cassava, while children helped with all crops. At Kersey, on the other hand, none of the men helped with food processing, and six out of 14 ex-inpatients helped in processing cassava. Women and children were, however, fully responsible for processing of all food crops.

Cassava, although easy to cultivate and store, is difficult to process. Nine of the ex-inpatients said cassava was hardest, three out of the five at Kersey, and 15 out of 25 in Laduba and Ago. Other food crops mentioned, which were also relatively hard to process were, yam flour, and sorghum.

Storage

Crops for consumption were stored in farm huts, home ceilings, or on the floors of empty store rooms. Pests and

spoilage (such as moulding) were major problems for farmers. They lost up to 40 percent of their crops due to storage problems. This, as will be shown, was one of the reasons for some farmers to sell their crops as early as possible. Cassava could be stored in the ground without harvesting for up to two years, certainly, its big advantage.

Marketing

At Laduba and Ago (Table 12), spoilage and economic needs were the most important determinants of crop marketing patterns. About half sold gradually when in need of money, while a few waited until prices were high, or sold (especially yams) first because they feared "it would spoil fast." In contrast, at Kersey which is more urbanized than the other two settings, relatively greater proportion said they could wait until April-June when prices were high to sell their crops. On the other hand, a fewer proportion of the ex-inpatients could sell gradually and very few could wait until the prices went up. In summary, in all the three settings very few farmers made no sales at all.

Seasonal Food Availability

Farmers indicated that they rarely ran out, completely, of all food crops, at any point and time. But they indicated that there were seasonal variations in specific food crop

season.'

Decision Making on Crop Production

The general pattern of decision making in this area was very similar in the three ethnographic settings (Table 13). The women for the most part suggested that their husbands never consulted them before planting so they had little input on the decision making on types of crop production. But the women farmers had to always let the men know what they were about to plant. Their husbands made most of the decisions because "the women did not traditionally farm."

Table 13. Decision Making on Crop Production

Responses	Laduba/Ago	Inpat.	Ex-inpat.	Total
Entirely men's affair	13	5	7	25
Women may suggest, husband's request	5	1	1	7
Both decide due to joint ownership, women know market well, love each other	4	4	4	12
Husband+favorite wife	1	0	0	1
Other	2	5	2	9
Total	25	15	14	54

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Husband+favorite wife	1	0	0	1
Other	2	5	2	9
Total	25	15	14	54

Decision Making on Trading

Although trading as opposed to farming was regarded as the "women's affairs," the men could override their decisions especially if they helped "sponsor their trade" (set up their business). When asked who decided on what commodities to sell (Table 14), at Laduba and Ago some women said it was the women's affair, so they decided, and their husbands could not tell them what to or not to sell. About an equal number claimed that only if the husbands sponsored the trade could they (the husbands) interfere. About half said that they decided on their own but would still have to inform the husbands, "as a courtesy," and the husband may "override their decisions." Again, it is interesting to note that similar decision making patterns were observed amongst the Kersey inpatients and ex-inpatients.

Decision Making on Child Feeding

Conscious household decision making was not made on infant feeding behaviors. However, accumulated information and learned behavior seemed to influence infant feeding. Therefore, mothers were asked to identify their learning channels on breastfeeding and weaning practices.

Learning Channels. The most common learning channel for breastfeeding was the family, particularly mothers and

Table 14. Decision Making Processes on Trading

Responses	Laduba/Ago	Inpat.	Ex-inpat.	Tot.
Women's affairs men may not interfere	5	7	5	17
Men interfered	4	2	1	7
Men need to be informed, and they may override decision, or both decide together	9	4	3	16
Men's responsibility, had the authority, and were in control	5	1	4	10
Other	2	1	1	4
Total	25	15	14	54

grandmothers. Artificial milk, fudu, feeding practice was learned outside the family sphere of influence. The majority of the mothers (18 out of 25) at Laduba and Ago learned about breastfeeding from their mothers and four from grandmothers while the rest (three) learned, according to the mothers, from "others," from "God," and from "tradition." In contrast, out of the eleven mothers that introduced fudu to their babies, three learned about fudu from "neighbours," four from "nurses," two from the "literate or the educated" (for the most part, elementary level of education) mothers, one from "a relative in the cities," and finally one from a "grandmother." Similarly, at the clinic, the majority (12 out of 15) learned about breastfeeding from "mothers," and three

from "grandmothers." Similar patterns were observed amongst the ex-inpatients, the majority (nine out of 14) learned about breastfeeding from their "mother," two said that "they met it" (tradition), while three learned from "others." In contrast, all of the mothers who introduced fudu to their babies learned about it from "neighbours" and "others."

Therefore, it is implied that trendy beliefs and practices influenced uses of fudu (infant formula or artificial milk) in the rural study villages. Illiteracy rate for the adult population was very high (up to 95 percent, based on 1986 IADP records). Thus, education will most probably not be a major determining factor of infant feeding practices for this population.

The great majority of the mothers in Laduba and Ago (20 out of 25) learned about weaning practices from family such as mothers and grandmothers, one learned from the "nurses," and three from "others," and from pre-existing "traditional practices." Interestingly enough, at the clinic, the nurses did not play a major role. All of the mothers claimed that they learned about infant weaning practices from their mothers. At the postclinical village setting the majority (11 out of 14) of the ex-inpatients learned about weaning from their "mothers" and "grandmothers," one from "neighbors," and two from "others."

When mothers were asked to identify the place or person they learned the practice of dala gbara more than half (16

out of 25) in Laduba and Ago mentioned "tradition." They said, "everybody did it and we have to follow the tradition." Five learned the mode of feeding from their "mothers" and "grandmothers." Four did not practice dala gbala. In contrast, at the Kersey clinic, only one continued the traditional practice, dala gbala. Five claimed that they did not know how to dala gbala. And the greatest proportion (9 out of 15) did not practice it, in other words, they "did not follow the tradition." Similarly, the majority of the ex-patients (11 out of 14) did not practice dala gbala. The very few (3 out of 14) that still continued the traditional practices learned it from "tradition," "grandmothers," and "mothers." The ethnographic data clearly reflects the historical changes on infant mode of feeding behaviors as influenced by health practitioners and missionaries which is more evident in Oyo than Kwara.

Chapter VI. INFANT FEEDING BEHAVIORS

Perceptions of Infant Feeding and Health

Concepts of "power" and strength" are popular in Nigerian culture, particularly Yoruba (Orwell and Murray, 1974). These concepts are generally associated with consumption of certain foods such as yams and ogi. Most interestingly, "growth" was hardly referred to within the context of food consumption and nutritional status. No one at Laduba and Ago related consumption of food to growth. This has, in agreement with above, been observed in Bankole's (1982) Yoruba community (about 10 miles from Ile-Ife) study.

It was clear that mothers believed giving the "wrong" types of foods would lead to illnesses. By the same token, the majority of mothers associated health with consumption of foods, amal, eko, and beans. Very few attributed health to curative or preventive herbs, agbo in Yoruba, or to medicines (Table 15). Eko and amala, the most common traditional weaning and infant solid foods respectively, were both perceived by the majority to contribute to child's health status.

Breastfeeding. All mothers felt that breastfeeding would make the baby's bones and body strong and powerful. Again, especially, at Laduba and Ago, the mothers did not perceive

Table 15. What Makes A Baby Healthy

Foods*	Laduba/Ago	Inpatients	Ex-inpatients
<u>Eko</u>	11	9	4
<u>Amala</u>	7	5	2
All Foods	4	0	0
Beans	5	8	9
Rice	2	2	5
Eggs	2	4	1
Veg/Fruits	2	2	0
<u>Tuwo</u>	0	2	5
<u>Agbo</u>	3	1	0
Medicine	1	0	1
God	1	0	0
Don't Know	1	0	1
Soya	0	4	2

*respondents gave multiple answers

relations between baby's growth and the amount of breastmilk consumed.

Infant Formula. Mothers were asked to compare breastmilk with fudu in Yoruba, derived from the English word "food," (Table 16). The majority felt that breastmilk was better than fudu although few introduced it to their babies because: "breastmilk was not enough and needed to be supplemented;" or "do not know about fudu, just imitating others." The idea that fudu may be regarded as a substitute for agbo was interesting although only one mentioned this. In general, our ethnographic observation indicates that although fudu had become 'trendy, in fashion,, the thing to do,' or as some said, "imitating others," breastfeeding was still regarded as more

Table 16. Comparison Between Breastmilk and Fudu

The Comparison	Laduba/Ago	Inpatients	Ex-inpatients
No difference	1	0	2
B.milk is better, no need for <u>fudu</u>	12	13	6
B.milk is better, not enough, needs supplement, <u>fudu</u>	2	2	4
B.milk is better, imitating others, don't know about <u>fudu</u>	5	0	1
Don't know, depends on God	4	0	1
<u>Fudu</u> is a substitute for <u>Agbo</u>	1	0	0
Total	25	15	0

important during the first few months of a child's life. In agreement with WHO's (1981) collaborative study all mothers breastfed their babies. However, not all of them breastfed fully, hence, putting the children in danger of infections and diarrhea from supplemental bottlefeeding of artificial milk.

The mothers were also asked what they thought about delaying introduction of fudu. The majority at Laduba and Ago that fed their babies fudu (12 out of the 14 that introduced fudu to their babies) said that they could not delay it because "once the child was old enough to take ogi it would

not need fudu anymore, and "if we waited two to three months to introduce fudu, we might as well wait a little longer and then introduce ogi." The other two did not show strong feelings against delayed introduction of fudu. One said that it all depended on money, "only those who didn't have money would delay introduction of fudu," while the other one said that it would be alright to delay it until two months after birth. In contrast, most of the mothers at the clinic (12 out of 15) said that they would not give their babies fudu. Only one out of the 15 said that delaying introduction of artificial milk depended on whether one had money or not while two claimed that they did not know. Similarly, many (9 out of 14) of the ex-inpatients did not feed their babies fudu. Only one said that she would not delay it while the rest (four) did not know.

Ogi. As shown in Table 17 the concepts of "light body," "power," "strength," and interestingly, "walking in time" were the most highly associated with ogi consumption. It is interesting to note that the mothers at the clinic and postclinic village settings were more likely to associate ogi consumption with "healthy," "strong," and "powerful." Especially at Kersey Clinic the mothers were exposed to the concept of "growth," since the babies' height and weight was being measured on a regular basis. In Cherian's (1981) study, carried out at an ante-natal clinic in Zaria, mothers used

Table 17. Effects of Ogi

Effects on Baby	Laduba/Ago	Inpatients	Ex-inpatients
Walk in time, light body	7	2	3
It's good, traditional, special food	3	1	0
Strong, healthy powerful body	8	12	9
Satisfy baby not worry mother	4	0	0
Works well on body	0	0	1
Prevents diarrhea etc.	2	0	0
Don't know	1	0	1
Total	25	15	14

relatively more concepts like "strength," "health," and "growth." This discrepancy between the clinic and village setting is thus most probably due to the fact that the clinic mothers were constantly exposed to nutrition and health education strategies that generally introduced such concepts.

The Best Infant Foods. The mothers were asked to name the best food for a baby immediately after birth. It is interesting to note that there was a relatively higher regard for agbo at Laduba and Ago where there has been minimal health

and religious (Christian) outside intervention (Table 18). The practice of introducing agbo has been regarded as 'traditional,' and 'obsolete' by health professions and religious leaders. And if mothers did not give agbo to their babies for the above reasons, as a substitute, they would give either plain water or glucose.

Table 18. The Best Infant Food

The best Foods	Laduba/Ago	Inpatients	Ex-inpatients
B.milk only	1	8	4
<u>Agbo</u> only	3	0	0
<u>Fudu</u> only	1	0	0
B.milk+ <u>Agbo</u>	11	4	1
B.milk+water	0	3	7
B.milk+ <u>fudu</u>	4	0	2
B.milk+ <u>fudu</u> + <u>Agbo</u>	2	0	0
Other	3	0	0
Total	25	15	14

Ojofetimi (1981) found in her clinic-based study, at a state hospital and two local maternity centers, Ile-Ife, that mothers generally brought feeding bottles, glucose D powder, bottle warmer, thermoflask, and artificial milk to the clinics. So, immediately after birth, instead of breastmilk, glucose-water was given to the infants, initially. "The introduction of glucose water prior to breastmilk," had negative effects, "gave the infants satiety and more importantly, reduced the eagerness to suck...(Ojofeitimi, 1981:413).

Table 19. Initiation of Breastfeeding

	Laduba/Ago	Inpatient	Ex-inpatient
Immediately after birth, 1st day	20	12	11
2-3 days after birth	5	3	3
Total	25	15	14

As shown in Table 19, the majority of the mothers at Laduba and Ago put the baby to the breast immediately after birth. Few delayed giving breastmilk for up to three days, because they gave birth at a clinic. They claimed that the nurses urged them to give only glucose for the first three days. During those initial three days after the baby's birth, the mothers removed the colostrum because "the milk was not clean, and not white in color." Similarly, at the clinic, the majority breastfed immediately, while few delayed it for up to three days. A similar pattern was observed amongst the ex-inpatients.

Problem of Overfeeding. When asked what happened if the child ate too much, many (18 out of 25) mothers at Laduba and Ago said, "overfeeding is not good because it will cause sickness such as diarrhea, or the baby will not be able to

walk, and will not have peace of mind, or it will get big belly." Seven, on the other hand, said that it was not possible because the baby would cry, and added, "it is unhealthy and the baby would become fat," considered a bad trait. In contrast, all at the clinic, and the majority (12 out of 14) at the postclinic village setting, felt that it was not possible, besides "it will lead to sickness, delay in walking, heaviness, vomiting, stomach trouble, and big belly." While the rest (two) ex-inpatients said, in disagreement with the others, that it was good if the child ate too much.

Child Body Image. The most desirable maternal body image of a baby was "light," fuye, "strong bones," and "powerful body." It was not desirable to have a heavy, wiwo, baby because it meant that the baby was sick. "If the baby was heavy," the mothers said, "it would be sickness, arun." It is interesting to note that the subjects saw no relationship between "heavy" and "fat" baby. A baby may be "fat" but not necessarily "heavy." Heaviness was associated with low level of activity and high body weight. "A heavy baby will sit in one spot for very long, inactive, and will not play around like other 'light', fuye children," furthermore, "it is more difficult to carry than light baby." No one desired a baby who was too fat or skinny because "that is sickness." About half of the mothers felt that the cause of "the sickness" was destiny, "God willed it." Only three attributed it to

heredity, "because the child had fat or skinny parents."

Causes and Treatments of Child Illnesses. As mentioned above, some of the causes of child illnesses mentioned were fate or destiny, "God willed it." Others included, "too much exposure to the sun," "worms" and "not giving agbo to a breadfeeding baby." When asked what measures mothers would take to ensure a baby's good health, at Laduba and Ago, about half (11 out of 25) said they would prepare agbo, seven would take the child to the hospital, and two would try both agbo and hospital. Responses from the rest (five) included: "bathe and keep the child clean" (two); "I don't know" (one); and "food and play" (two). At the clinic however, not surprisingly, the majority (13 out of 15) said they would take the baby to the clinic, only one mentioned preparation of agbo, and one did not respond. Similarly, all the ex-patients said they would go to the hospital. Traditional belief and classification systems of specific children's ailments, causes and treatments are complex. It is beyond the scope of this thesis to cover it in great depth. A separate report on this topic has been prepared and presented to the DMD program (Mebrahtu, 1987).

Seasonal Incidences of Child Illnesses. Mothers identified seasonal incidences of infant illnesses (Tables 20 and 21). Measles, igbonna, affected children mostly during

the dry season. Kwashiorkor ile tutu, meaning wet ground in Yoruba, (identified by some mothers in Oyo state - the ex-inpatients), cold, fever, and convulsion (mostly identified by mothers in Kwara state) occurred in the wet season.

Table 20. Child Illnesses in the Dry Season

Child Illnesses	Laduba/Ago	Inpatients	Ex-inpatients
<u>Igbonna</u>	20	13	9
Fever	2	1	4
Convulsion	1	1	0
Body pain, Headache	2	0	1
Total	25	15	14

Table 21. Child Illnesses in the Wet Season

Child Illnesses	Laduba/Ago	Inpatients	Ex-inpatients
<u>Ile tutu</u>	0	0	4
Fever	8	4	3
<u>Igbonna</u>	1	0	2
Convulsion	2	5	3
Don't know	1	0	1
Cold	7	6	1
Others	6	0	0
Total	25	15	14

However, they stated that the seasonality factor did not affect the amount or type of food eaten by the child. The mothers did not indicate any seasonal patterns for incidence of child diarrhea. In general, according to the mothers, two illnesses showed distinct seasonal patterns, ile tutu, in the wet or rainy season, while incidence of igbonna was higher

during the dry season.

Descriptions of Healthy and Sick Babies. The mothers' description of a healthy baby ranged from, "an active baby" to "one that played around and did not worry the mother" to "one with strong bones" and "ate and slept well." A sick child was described as "one with high temperature" or "sat in one spot and did not play around," and "moaned and worried the mother." Table 22 contains classifications of mothers' descriptions of healthy and sick babies.

Table 22. Description of Healthy and Sick Babies *

A Healthy Baby	Laduba/Ago	Inpatients	Ex-inpatients
Normal temp.	6	4	1
Active play	15	10	13
Strong bones	5	2	3
Sleep, eat well	2	2	2
Develop, grow	1	0	1
Don't know	0	0	1
<hr/>			
A Sick Baby			
High temp.	7	11	11
Inactive, weak, dull	20	5	12
Brown, red eyes	3	1	1
Appetite loss	2	8	5
Crying - always	3	5	1
Fat cheeks	1	0	0
Lean, skinny	0	3	3

* Multiple answers were possible

Infant Feeding and Caretaking Practices

Breastfeeding Period. The average breastfeeding period has declined in the last two decades in Nigeria. According to the mothers interviewed, the period dropped from an average of 3.5-4 to 1.5-2.5 years. This phenomena has been noted by numerous authors (Orewll et al. 1984; Meldrum & Di Domenico, 1982; Mudambi, 1981; and Isuigo-Abamihe, 1986). Paralleling this decline in breastfeeding period has been increased use of artificial milks and glucose powder (Ojofeitimi, 1981); and Orwell and Murray, (1974). However, the duration of breastfeeding varies by location, maternal status, and other factors -- such as age of the mother, also suggested by Dow (1977:209):

. . . there is a direct relationship between age and the duration of breastfeeding. Among rural women for example, breastfeeding duration increases quite regularly from 17 months at ages 20-24 months at age 50-54 . . . the effect may also be attributed to a general pattern of social change that proceeds through the diffusion of new ideas or values.

Mothers breastfed for a longer period of time in the predominantly Muslim villages, Laduba and Ago in Kwara state, as opposed to the Christian and urban influenced setting surrounding Kersey, in Oyo state (Table 23). Dow (1977:208) observed differences along similar lines, poor rural versus rich urban, ". . . durations of breastfeeding of 22 months in rural and poorer urban communities and nine months in richer

Table 23. Duration of Breastfeeding

Duration	Laduba/Ago	Inpatients	Ex-inpatients
3 yrs+	7	0	0
2-3 yrs	7	14	11
1-2 yrs	3	1	3
Couldn't say	8	0	0
Total	25	15	14

urban communities. Virtually all the rural women and all the poor urban women were breastfeeding in the twelfth month and the great majority were still breastfeeding in the eighteenth month. Among the urban rich, only one-third were still breastfeeding in the twelfth month, and less than ten percent were breastfeeding in the eighteenth month."

Supplemental Feedings. Use of artificial milk is much higher in the urban areas but the practice has also spread into the rural areas, "as a result of imitation and advertisement in the national newspapers," roadside billboards, ". . . and other communication media such as radio" (Meldrum & Domenico, 1986). About half of the mothers in Laduba and Ago introduced artificial milk (fudu) to their babies (Table 24). In contrast, relatively fewer at the clinic and postclinic settings respectively gave fufu. They also introduced it at later times in the children's life. The most common responses, at Laduba and Ago, when asked why

Table 24. Introduction of Fudu

Introduction	Laduba/Ago	Inpatients	Ex-inpatients
1-2 weeks after birth	6	0	0
1-2 months after birth	3	1	1
2 months+	2	3	1
Total	11	4	2

they used artificial milk, fudu, were as follows: "we want to be like the educated ones;" and "educated people introduced it so it must be good. . ." But at Kersey Clinic, at Ogbomosho, nurses were actively discouraging bottlefeeding, with a slogan, "bottlefeeding is not a baby feeder, it is a baby killer..." This is a good indication that if the breastfeeding campaign reaches mothers in rural areas coupled with increasing imported food prices, other things being equal, the trend towards increasing bottlefeeding could be reversed.

According to key informants interviewed (a key informant representing one of the three generational categories - older, above 50 years; middle aged, 35-50; and younger mothers, below 35): "everyone in the new generation would like to give their baby fudu if money was no problem." The reasons given were that mothers tended to imitate the

'educated' ones in the urban centers. In one of the focus group interviews conducted, three generations, the grandmother, mother, and the daughter were present from the household. Unfortunately, the grandmother could not actively participate in the discussion because of a hearing problem. But she was shocked to learn that the granddaughter was offering fudu to her baby. The mother also resisted the 'foreign' practice of bottlefeeding. She scolded the daughter for feeding the baby artificial milk. Another subject, also an older mother, said that fudu caused jedi jedi, a dysentery, and added, "I don't even know why mothers these days give their babies fudu, . . . for children were better off in the olden days. . .nowadays, diseases are rampant, and besides mothers should be with the child (breastfeeding) for over three years." And when we asked why all these changes in breastfeeding patterns had occurred, the older women said, "time . . . times have changed, in the olden days mothers never gave babies fudu because there was agbo, unlike nowadays" More specifically, the people responsible for all these changes, the older women felt were, "the educated people." Also, oyibo, meaning the White Man, in Yoruba, they said, "is deceiving their people by introducing medicine, including fudu and charging them lots of money for it." In the olden days, not only was fudu unavailable, but there was some resistance to accepting "new" or "foreign" infant feeding practices, to preserve traditional infant feeding habits.

The fathers were particularly important in purchasing of fudu. One of the middle aged fathers admitted that "he could not buy fudu for his baby because it was getting to be too expensive." When asked why he would like to buy fudu in the first place, he said, "because the educated people in the cities are doing it and I'd like to be like them." A mother introduced fudu to her baby on the second week because her husband could afford to buy it. In agreement with these observations, Cherian (1981:78) said, "one of the most pernicious reasons for using formulas is the father's purchase of milk, who, in exuberance and concern for weight gain in his child or to lessen his cries, brings about a major change in feeding his offsprings." Orwell and Murray (1974:211) similarly suggested, "the husband is more likely to buy infant milk powder than his wife, while the reverse is true of tinned milk, most probably due to men's general habits of goods buying and effects of advertising. Husbands may use shops to a greater extent than their wives who tend to stick to the markets for food buying." Hence, there is a great need to emphasize addressing infant nutrition and health intervention strategies to both parents rather than mother alone.

The middle aged mothers were less inclined to offering fudu unless they were from a high socio-economic status. Young mothers, on the other hand, if finance was no problem, generally practiced mixed feeding. That is, they breastfed, in addition to offering their babies supplemental feedings of

artificial milk, and glucose. They substituted the more traditional practice of agbo feedings with water, artificial milk, or glucose. Relatively few mothers (three out of 25 in Laduba and Ago, one out of 15 in Kersey, and three out of 14 ex-inpatients) introduced glucose to their babies. They generally initiated glucose feedings during the early days (the first 40 days) of the child's life. These supplemental feedings were given "because," the young mothers said, "breastmilk alone was not enough for the baby," and they "saw others doing the same thing," so they felt "it was good for the baby." According to Meldrum and Di-Domenico's (1982:1249) findings, "...14 percent said that 'nowadays' we have a baby food and feeding bottles and 36 percent said 'before' mothers gave agbo and now we use baby food instead." Agbo was highly regarded, interestingly, as indicated earlier, more by mothers in Laduba and Ago than the others (Table 25). It was given to babies, often, right from birth until the end of breastfeeding period.

Weaning Foods. "The first native food given to the weaning babies of over ten million Yoruba in Nigeria is ogi, a sour beverage prepared from white maize flour" (Akinrele and Basir, 1967). All of the mothers at Laduba and Ago, Kersey, and the majority (12 out of 14) of the ex-inpatients said that ogi was the best weaning food, the other two ex-inpatients mentioned fudu and fruits. According to the mothers

Table 25. Effects of Agbo

Effects on baby	Laduba/Ago	Inpatients	Ex-inpatients
Strong, powerful light baby	5	1	3
Clears bad things	3	0	0
Tradition, good	7	2	0
Tradition, bad	3	7	10
Preventive	3	1	0
No comment	4	4	1
Total	25	15	14

interviewed ogi was commonly prepared as follows: maize or preferably sorghum seeds were soaked in lukewarm water overnight (if in cold water for two to three days) after which they were wet milled and sieved in cheese cloth with much water to remove the fibre hulls. The filterate was then allowed to set and become sour. This sediment was diluted to about 10-15 percent (total solids in water) and boiled into a stiff gel known as eko.

History of Ogi Processing. Processing techniques of ogi has changed over the years. "In the 'olden' days (about a generation or more ago)," continued one of our key informants, "the fermented sorghum was not wet milled or sieved especially

using cheese cloth. Instead it was pounded in wooden mortars with pestels, and sieved using metal sieve trays to basically clean and drain water off. The earlier processing method thus retained most of the fibre hulls, aleurone layer germ. The new method of processing also altered the texture of the food product. All of the key informants said that ogi used to be "hard" and not "smooth, soft, and white as that of the modern ogi. And they all seemed to prefer the latter. Oke (1967) found that there was actually nutrient loss in protein and mineral contents of maize when processed to ogi. This, however, was not due to milling and sieving which, as mentioned already, removed a considerable portion of the hulls and aleurone layer and germ (Akinrele and Bassir, 1967). Akinrele and Basir further suggested that the fermentation may bring a slight enrichment in the thiamine and protein contents of maize.

Nutrition and Frequency Feedings of Ogi. Ogi is a poor weaning food (Appendix II). For long, it has been associated with kwashiorkor, first noted in 1933 by Cecil Williams in Ghana. The Nigerian Minister of Health, Ransome-Kuti (1986:200) stated, "most children were weaned on maize gruel. This inappropriate feeding practice at the weaning period...is a major cause of diarrhea and malnutrition..." Similarly, Ekeh (1985) suggested, "from six months of age until school age, the diet of the children from low income group is

nutritionally inadequate. This is mainly due to the poor weaning diets..." Table 26 depicts feeding frequencies of ogi; the children were fed, on the average, three times a day (about 3/4 to 1 cup of ogi per feeding). The mothers at the clinic were overly encouraged to feed their children more often which is reflected in the increasing feeding frequency amongst the inpatients and ex-inpatients compared to mothers in Laduba and Ago.

Table 26. Feeding Frequency of Ogi

Feedings/Day	Laduba/Ago	Inpatients	Ex-inpatients
2	7	3	5
2-3	12	1	1
3-4	4	9	5
4+	2	2	3
Total	25	15	14

Economics of Ogi. Ogi is the cheapest weaning food available. About 10 kobo worth of ogi could feed a weaning baby of about six to nine months for an entire day. All of the mothers said that ogi was very cheap, the cheapest food available for weaning infants. Fourteen mothers, at Laduba and Ago, bought their ogi from the market, while nine made their own. The majority (12 out of 15), at the clinic, bought their ogi from the market and three made their own. Similarly, ten of the ex-inpatients bought their ogi while three made it at home.

Why Ogi. The major reasons for starting ogi pap, according to the mothers, were that "breastmilk was not enough," and to basically "satisfy the child," or "prevent hunger" (Table 27). Ecological and cultural context were, of course, the next most important factors, "the only baby food available," or "traditional, and special infant food available and known."

Table 27. Why Ogi

Reasons	Laduba/Ago	Inpatients	Ex-inpatients
B.milk not enough	7	5	6
Prevent hunger, satisfy baby	5	3	0
The only baby food known, special, tradition	10	3	3
Not ready for solids yet	1	0	2
Pass bad things through urine	1	0	0
Don't know	1	0	2
Gives power	0	2	0
Prevent Sickness, light body	0	1	1
Grow	0	1	0
Total	25	15	14

Similarly, Bankole (1982:323) reported, "the indication for starting pap, subsequently solids, were mainly that the child was not satisfied with the food he was already getting." Kusin et al. (1985:285) in their study, at Madura, East Java, Indonesia, Machakos and Kenya, also found that, at Madura especially, mothers "usually mentioned that the infant cries too often and hence must be hungry when solely breastfed."

Mode of Feeding. The ogi is traditionally poured into the child's mouth by the mother who has placed the child on its back on her lap, arching the head back. With the right hand, the mother may occasionally block the child's nasal passage, especially if the child refused to eat, and force its mouth open. This traditional mode of feeding is commonly known as 'forcefeeding,' or 'handfeeding,' and in Yoruba as riro, dala gbala, or mu. When asked what they would do if the baby refused to eat, about half in Laduba and Ago said that they would dala gbala. A few would take the child to the hospital, an equal number would not do anything. In comparison, at the clinic and postclinic settings, not surprisingly, a smaller proportion said that they would dala gbala, while a greater proportion claimed that they would take the baby to the hospital.

Dala gbala is actively being discouraged by health professions. Odebiyi (1985:333) claimed "the children of the

illiterates (who benefit from the breast) are more exposed to the dangers of force handfeeding which has been associated with other respiratory tract infections in children..." The UNESCO's (1983:56) nutrition education campaign defines it as follows: "handfeeding is not hygienic and should be discouraged. It can also be dangerous as the infant could be suffocated. To be able to pour the pap, or thin gruel, it has to be diluted and this reduces its energy concentration.

Why Dala Gbala. The major reason implied by the mothers (Table 29) was the baby refusing to eat. Few (two) indicated that it was time efficient and their work as important factors. They said dala gbala was "the quickest when baby refused to eat," for "we want to do our work." And some of the mothers felt it was "traditional."

Fortification of Ogi. Very few (Table 29) in Laduba and Ago tried adding sugar, milk and eggs to ogi. Out of those only one of did not continue the practice due to financial constraints, while the rest were still interested in the fortification of ogi. But if the "educated people" told them that it was good for their babies, they said that they would be willing to try it themselves, at least, before directly giving the "new" fortified food to their babies. At the clinic all of them were of course participating in nutrition/health intervention program. So they were

Table 28. Why Dala Gbala

Reasons	Laduba/Ago	Inpatients	Ex-inpatients
Baby reused to eat	16	10	9
Tradition, only way of feeding, no spoon bottle imitate others	8	1	2
Quickest way when baby refuses to eat, want to do our work	0	0	2
Don't know	1	4	1
Total	25	15	14

Table 29. Fortification of Ogi

Responses	Laduba/Ago	Inpatients	Ex-inpatients
Never fortified willing to try	18	0	0
Never fortified not willing	2	0	0
Never fortified don't know	1	0	1
Fortified had problems	1	0	0
Fortified no problems	3	15	13
Total	25	15	14

fortifying the ogi with kulin kulin and soypaste. Only two used to add eggs before coming to the clinic and one sugar. Among the ex-inpatients one had never fortified ogi, four continued to add kulin kulin and gave her baby beans separately, two added soya and sugar, and two did not add anything because the children were eating solids at that time.

Infant Caretaking

Until "a child is too big and heavy to carry on the back," 12-18 months of age, the mother took the infant with her wherever she went, to the market, farm, wells, and to the stream. Therefore, during its very early stages of life, up to 1 to 1.5 years, the child was solely the mother's responsibility. Later in its life, 12-18 months and above, the infant was left behind, to be looked after by older siblings, co-wives, grandmothers, other relatives, neighbours, and in rare cases, by the father.

Chapter VII. SUMMARY AND CONCLUSIONS

This preliminary ethnographic study has shown that the two indigenous crops, yam and sorghum, are facing competition with the recently introduced cassava and maize. The main reasons for this shift in cropping patterns were: (1) relatively greater cultivation time requirements and storage problems associated with yam and to some extent sorghum; (2) population pressure and scarcity of good land; (3) male out-migration affecting family farm labor availability; and (4) economic incentives - higher economic returns from maize than from sorghum; the economic incentives of cassava versus yam were not as clear.

The farmers were concerned with cowpea pest production problems. Kersey Clinic has actively been involved in promoting soybeans by teaching the mothers how to grow and process the bean as protein and energy fortification of ogi and other traditional infant solid foods such as tuwo and amala. The Clinic's intervention program was successful at the clinic setting, virtually all the mothers followed the clinic's nutrition program. However, at the postclinic setting the rate of adoption declined and there was a high rate of "returnees," a reflection of this phenomenon.

In Laduba and Ago, a predominantly muslim area, women participated in few phases of agricultural activities, harvesting, threshing, and transportation. However, the

trends were for women to begin owning farm plots thus increasing their farm responsibilities and total work load. On the other hand, in Ogbomosho, an area highly influenced by Christianity, the women were more actively involved in agriculture. And relatively more women owned farm plots. In both regions virtually all Yoruba women were involved in some form of trading which was highly compatible with child care.

Perceptions of infant foods and nutrition were found to be very important among the Yorubas. The mothers believed that specific foods such as ogi and amala made their babies "strong" and "powerful." They had definite desirable baby body images. They felt that their babies should be "light," active and light weight, as opposed to "heavy," inactive and heavy weight.

In conclusion, this study has shown the complex nature of the child nutrition problem in rural Nigeria. The study is important for it generated, in addition to rich descriptive information, culturally and ecologically specific and insightful hypotheses for a more rigorous study (the second phase of this project). The determinants of infant feeding practices and nutrition are a web complex of socioeconomic and ecological factors. To arrive at a clear understanding of these multi-faceted and interdependent relationships, a systemic approach with a comprehensive view at the farm household level is required.

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Appendix I. Map of Nigeria





INTRODUCTION

This is a guide for the ethnographic study that will be done from February to April, 1977, in Logothepi, Karyi Chalkidiki Island, and six villages surrounding Karyi (where Karyi is disappearing have been traced).

This guide is to be used as a reference manual during the FORTHING II field research. It is not meant to be substitutive with any other methodology or content on ethnography. The field workers will be provided with supplemental reading materials and a training manual during the training session and prior to initiating the preliminary ethnography.

The field workers are not expected to follow strictly the format of the interview guide. They may use it as a reference to guide the research questions and to make sure and complete the key research questions.

Appendix II. The Ethnographic Field Guide

The interview guide is divided into four sections. Each section addresses a general research topic which is in turn subdivided into more specific but research topics. Section one addresses questions on household structure and household agriculture (crop production, processing, management, marketing, income, and household labor allocation). The second section focuses on other feeding practices (household, no. of meals, feeding, weaning, and perceptions of infant feeding and child health). The third is on extended kinship and child placement. Finally, the fourth section deals with household structure, working practices, specifically on trading, crop production, and child work.

Some of the visits per household will be made, thus covering a certain per household visit.

Introduction

This is a guide for the preliminary ethnography that will be done from February to April, 1987, in Laduba/Ago, Kersey Children's Clinic, and six villages surrounding Kersey (where Kersey ex-inpatients have been traced).

This guide is to be used as a reference manual during the training of field workers. It is not meant to be exhaustive with regards to methodology or content on ethnography. The field workers will be provided with supplemental reading materials and a training manual during the training session and prior to initiating the preliminary ethnography.

The field workers are not expected to follow strictly the format of the interview guide. They may use it as a reference to frame the research questions and to make sure and complete the key research questions.

The interview guide is divided into four sections. Each section addresses a general research topic which is in turn subdivided into more specific key research issues. Section one addresses questions on agricultural practices and household dynamics (crop production, processing, consumption, marketing patterns, and household labour allocations). The second section focuses on infant feeding practices (breastfeeding, supplemental feeding, weaning, and perceptions of infant feeding and child health). The third is on seasonal incidences of child illnesses. Finally, the fourth section deals with household decision making processes, specifically on trading, crop production, and child care.

Four repeated visits per household will be made, thus covering a section per household visit.

SECTION ONE

Agricultural Practices and Household Labor

Agricultural Production and Labor

1. What crops do you grow in your farm? Do you have livestock? What kind? (Get a general sense on the crop diversity and probe on the different kinds of crops grown).
2. What do you grow the crops for (ex. mainly to eat or to sell)? Do you grow crops that are only for the market (ex. tobacco, cash crop)? Who sells these crops for you?
3. How would you list your crops from the most important to the least important (make sure to distinguish consumption importance from economic importance but be careful not to lead)? Ask Why?
4. Who in the household works (helps) during:
 - (a) preparation of land? Why or why not?
 - (b) planting? Why or why not?
 - (c) weeding? And bird scaring? Why or why not?
 - (d) harvesting? Why or why not?
 - (e) threshing? Why or why not?
5. Did you have to hire additional labor? Why? How much did you spend? How did you find the hired labor expenses?
6. Do women and men work on the same farm or do they have separate farms? If yes, are the crops grown in each men and women's farm different? If yes, why?
7. How do you know what crops to grow, where and when? (Probe for the farmer's knowledge on rotational cropping, intercropping, shifting cultivation, fallow period, and the logistics behind those).
8. If money was no problem which crop would you grow the most? And why? PROBE.
9. Which crop do you think is the best for the family? Why? (Again probe if the crop is best for consumption or for sales) Do you grow much of this crop? Why or why not?
10. Do you buy crops from the market, which ones? How often?
11. If money was no problem, would you grow all the crops your household needs or would you buy them from the market? Why?
12. Do you have a garden? Why or why not? If yes, do you sell your garden vegetables to the market? Or consume at home?
13. Do you grow fruits? Why or why not? If yes, do you sell your fruits to the market? Or consume at home?

Agricultural Utilization and Labor

1. Do you store some of your harvested crops, or sell all to the market? Why or why not? If you sell to the market, when? Why?
2. Do you ever run out of stored crops? If yes, what time of the year? What do you do then? (Here, try to get a general sense if the farmers have food availability problem during the hungry season, but don't lead).
3. Can you store your crops for an entire year from harvest to the next harvest? If not why not?
4. How do you process your crops? ex. cassava, cowpea, yam, pepper?
5. Who in the household works (helps) during the processing of, and why:
 - (a) Cassava - peeling, pounding, fermentation, frying
 - (b) Yam - peeling, pounding
 - (c) Cowpea - grinding
 - (d) Tobacco - drying, tying
 - (e) Pepper - drying, pounding
6. Do you know how to cook soybean? If yes, from whom did you learn how to cook soya?
7. Which crop is the easiest to process? How often do you eat it in the household? Why? Which crop is the hardest to processes? How often do you eat it? Why?
8. How often do you eat fruits in the household?

Agricultural (Technological) Inputs

1. Have you been approached by an agricultural extension worker from ADP? How often?
2. Whom did the ADP officer ask for? Why?
3. What did the ADP officer have to tell you? What do you think about what the officer said? Why?
4. If your soil was bad (poor), what would you do? (don't lead but probe for possible uses of fertilizers, chemical and manure, shifting cultivation etc.).
5. Do you have problems with pests, crop diseases? What kind? What do you do? Why and why not? (again probe but don't lead on possible uses of pesticides, "improved" resistant varieties).
6. Did you ever loose all your crops because of crop diseases, pests? How did it affect your household? Probe.
7. If money was no problem, how would you solve problems of pests, diseases, and bad (poor) soil? (probe for farmers' knowledge of "improved" seed varieties, pesticides, and different kinds of fertilizers but be careful not to lead).
8. If inputs are used ask the following questions:
 - (a) Fertilizers
 - (i) How do you apply the fertilizers?

- (ii) From whom did you learn how to apply the fertilizers?
- (iii) How often do you use them?
- (iv) What happened to the crops after the use of fertilizers?
- (v) Where did you buy the fertilizers?
- (vi) How did you find the expenses?
- (b) Pesticides
Ask questions (i) to (vi) in the above
- (c) "Improved" seed varieties
Ask the farmers to specify the seed varieties and then ask question (i) to (vi)

Land Tenure and Land Acquisition

1. How did you obtain the land? Is it rented, communally owned? bought? or inherited from kins, parent?
2. How many farm plots do you have? Do you work on all of them? If not, who does and why?
3. Where you born in this village? If not where? and why did you come to this village?
4. Were you able to acquire land immediately (NOTE - ask this question if the farmer has in-migrated)? How did you acquire the land?
5. Do all of your children live in this village? If not where are they? (Probe for possible financial assistance from older siblings who have out-migrated)

SECTION TWO

Infant Feeding Practices

Breastfeeding Patterns

1. What is the best food for baby, and why? (Just ask this as an open-ended question to elicit a spontaneous response; a way to introduce the topic of infant feeding)
2. After birth, when do you put the baby to the breast, and why?
3. If the baby is not put to the breast immediately after birth, what is the reason for the delay? What is done with the first milk (ex. colostrum)?
4. How long should the baby be fed breastmilk? How long should baby receive only breastmilk (How has this changed in the last generation? You will need to interview older women, especially grandmothers, to get at this).
5. When and why is mixed milk feeding begun (ex. breastmilk plus infant formula powdered milk)?

- (a) What milks are offered
 - (b) At what age (in months) are they offered
 - (c) Why are they offered
 - (d) How are they prepared (hygiene issues, dilution of, get measures)
 - (e) Is cost a factor; has dilution changed with economic decline
6. What is maternal perception of these artificial milks compared to breastmilk? (Try to get at cognitive process: why are the milks introduced; it is felt that the child needs these milks...be careful when probing not to lead).
7. How would you feel about delaying mixed feeding... supplementing breastmilk with other milks...until the baby was older? How old? Why or why not? What do you think would be the consequences of this?
8. From whom did you learn about breastfeeding? From whom did you learn about feeding milks?

Weaning Foods

1. What is the best food(s) for baby when the baby is ready to make more than breastmilk? (Another open-ended question to introduce solid feeding question).
2. What is the best age to introduce this food(s)? How does the mother know when the child is ready to have them? (What are the markers, ex. teething, walking...but don't probe).
3. OGI
 - (a) Preparation (procedure, dilution, storage)
 - (b) Frequency and volume given
 - (c) Cost (and compared to other foods)
 - (d) How often purchased
4. Why is ogi given? When is it first offered to the baby? How do you know it is time to give it?
5. How is ogi good for the baby?
6. Has ogi always been the major weaning food? Has there been a change in the last generation (ask grandmothers -- where other weaning foods given)?
7. Ogi preparation/fermentation process
 - (a) Why is prepared this way (such an elaborate process)
 - (b) Is this the traditional preparation
8. Have you ever made ogi with other preparations/ingredients? (ex. mixed ogis with cowpeas, yams, rice etc.) If yes, what are the recipes, preparations)?
9. How would you feel about a variation on the preparation of ogi? For example, adding other ingredients, such as palm oil, beans, peanuts, soya? Why or why not?
10. After ogi, what are the next foods you offer the baby? Why? At what age are these foods offered, and why?
11. If your baby refuses food, what would you do? (This question is a probe around the force-feeding issue).
12. Sometimes mothers feed their babies ogis and other liquid

foods by "pouring" or forcing it (find out Yoruba word for this method of feeding). Why is this done? How did you learn to feed this way? Do you think this is good for baby? (Probe be careful not to lead)

13. How do you feel about feeding legumes, such as cowpeas, to an infant of about six months of age? Why or why not?
14. How do you feel about introducing solids at an earlier age, say 4-6 months? Why or why not?
15. If money was no problem, what do you think would be the best food your baby, and at what age?
16. From whom have you learned or talked with about weaning foods?

Perceptions of Nutrition and Growth

1. What do you think makes a baby healthy? What is the description of a healthy baby? How can you tell when a baby is sick?
2. What should a mother do to make sure that her baby is healthy? (Probe for multiple response).
3. What do you think happens to a baby when he or she eats food? Is it possible that the baby can eat too much? How does the baby change if there is not enough food or too much food?
4. Have you ever had your baby's weight taken? What does this mean to you?
5. What do you think happens when a baby has breastmilk? Can a baby have too little or too much breastmilk? What happens?
6. Do you think a baby can be too chubby (fat)? Why or why not? How does this happen?
7. Do you think a baby can be too skinny (thin)? Why or why not? How does this happen? (Probe, not lead, to see if there is an understanding of the relationships between food intake and growth, and possibly infections).
8. When a baby is sick, what can happen?
9. Do you think babies should eat differently than older children or adults in your family? How? What foods are better for them, and why?
10. Do you think what you eat is good for you, and for the baby? How would you like to eat differently? How would this be possible?

SECTION THREE

Seasonality of Child Illnesses

General Illness Taxonomies

1. Can you give me the names of all kind of illnesses people have around here? What are the symptoms of each illness (Ask

this as an open-ended question an introduction to this topic).
 2. What kind of illnesses occur here in the dry season how about the rainy season?

Child Illnesses

1. Now how much of the illnesses do children experience? What are the symptoms of each illness?
2. Are any of these illnesses serious? Under what circumstances (when do they become serious)? What can happen to a child with that type of illness? Are there any circumstances when that illness is not serious?
3. What kind of child illnesses occur in the dry season how about in the wet season?

SECTION FOUR

Household Decision Making Processes

Child Care

1. How are decisions made to take care of infants? Who makes the first suggestion? Can the mother or father make the decision alone? Why? And Why Not?
2. Who normally takes the child to the hospital or to traditional healer when sick? Why?
3. Can the mother or father take the child for treatment without consulting the other, why? why not? (Here probe if other members of the household are involved in the decision making, especially a grand-mother or a mother-in-law but be careful not to lead)

Trading

1. How are decisions made on what commodities to trade in the market? How makes the first suggestion? Why Why not?
2. What happens next (Probe in case of disagreements)?
3. How do you know what is the best commodity to trade? Who helps you decide? Why, why not, and how? (PROBE).

Crop Production

1. How do you know what is the best time, method, variety of crop to plant? Who makes the decisions? Why, why not and How? (PROBE)
2. Who makes the first suggestion? Who can disagrees? What happens next?

Food	Energy (kcal)	Protein (g)
Oil (olive, refined)	239.00	0.10
Oil (coconut, solid)	95.00	1.75
Oil (palm, refined, solid)	247.00	11.10
Salt (table, solid)	264.00	20.00
Yam (raw)	113.00	1.90
Yam (boiled)	140.00	2.40
Beef	261.00	2.00
Chicken	140.00	2.50
Rice (raw)	361.00	7.00
Rice (boiled)	140.00	2.40
Wheat (wholemeal)	364.00	7.00
Wheat (white)	361.00	7.20
Plantain	72.00	1.50
Mango	110.00	1.00
Custard Apple (raw)	70.00	1.00
Guava (raw)	67.00	1.10
Cashew (raw)	64.00	1.10
Cashew (roasted)	63.00	1.10
Coconut (oil)	239.00	0.10
Coconut (solid)	95.00	1.75
Coconut (oil, refined)	239.00	0.10
Coconut (solid, refined)	95.00	1.75
Edam (soybean, dried)	422.00	35.00
Lentil (green, dried)	321.00	24.00
Groundnut (roasted)	480.00	25.00
Wheat (white, milled flour)	361.00	11.00
Wheat (white)	361.00	11.00
Flour	361.00	11.00
Spaghetti, raw	361.00	11.00
Spaghetti, cooked, drained	72.00	1.00
Tomato (raw)	34.00	1.00
Onion	36.00	1.00
Onion	42.00	1.00
Milk (cow)	67.00	3.00
Milk (sheep)	67.00	3.00
Butter	89.00	0.90

Appendix III. Food Composition of Selected Nigerian Foods

Foods	Energy (Kcal)	Protein (g)
Ogi (Maize/G.Corn)	108.22	2.13
Eko (cooked, solid)	95.00	1.75
G.Corn (dried, raw)	347.00	11.10
Maize (dried, raw)	364.00	10.00
Yam (raw)	119.00	1.90
Yam Flour	335.00	3.40
Gari	351.00	1.00
Lafun	342.00	1.50
Rice (dry)	363.00	7.00
Rice (cooked)	140.00	2.30
Rice (parboiled)	364.00	7.00
Wheat Bread	261.00	7.70
Plantain	77.00	1.30
Banana	116.00	1.00
Cashew Fruit Pulp	53.00	1.00
Breastmilk	67.00	1.10
Cow's Milk	64.00	3.30
Cooked Cowpeas	143.00	6.20
Cowpea (dried, raw)	342.00	23.10
Soybeans (dried, raw)	405.00	33.70
Egusi (melon seeds, dried)	567.00	25.80
Iru (Locust Beans, fermented)	432.00	36.50
Locust Beans (dried)	426.00	32.30
Groundnut (roasted)	595.00	23.20
Kulin Kulin (defatted G'nut)	386.00	36.40
Beef (lean)	172.00	22.60
Fish	269.00	47.30
Spinach, raw	26.00	2.10
Spinach, cooked, oiled	72.00	2.50
Red Pepper	94.00	4.10
Okra	36.00	2.10
Onion	41.00	1.20
Palm Oil	875.00	0.00
Palm Kernel	587.00	6.60
Sugar	400.00	0.00

SELECTED NIGERIAN STAPLE FOOD CROPS

- Yam** Nigeria's foremost root crop (yellow yam - Dioscorea rotundata, white yam - D. cayenensis) principally grown for food although an increasing proportion yam production also enters Nigerian marketing systems.
- Cassava** Recently introduced (1850's) root crop (sweet - Manihot utilissima, bitter - M. palmata) commonly processed to garri (cassava grains) and lafun (cassava flour).
- Guinea Corn** Sorghum vulgare, an important cereal crop in Nigeria primarily grown for human consumption (such as tuwo, made by stirring and allowing the thick paste to cool and gel) or used in brewing beer, burkitu
- Millet** A cereal crop more commonly grown in the northern part of Nigeria (early millet - Pennisetum typhoides, late millet - P. maiawa)

SELECTED YORUBA TERMINOLOGIES/CONCEPTS

- Ashakole** Gift (kind or cash) in exchange for borrowed farm land
- Fuye** A child who is 'light' in weight and physically active
- Wiwo** A child who is 'heavy' in weight and physically inactive, "one who sits in one spot"
- Arun** General illness, not feeling well, sickness
- Fudu** Industrial (processed) baby foods including infant formula, Glucose, and infant cereal foods
- Agbo** Medicinal herbs given to breastfeeding babies to drink to prevent illnesses also be used to wash baby's body after birth and subsequently on a regular basis

ACRONYMS

ADP	Agricultural Development Program, Nigeria
DMD	Dietary Management of Diarrhea Program of the Johns Hopkins University
FAO	Food and Agricultural Organization
IADP	Ilorin Agricultural Development Program
IITA	International Institute of Tropical Agriculture
RCMP	Resource and Crop Management Program of IITA
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNICEF	United Nations Children's Fund

Key Informats Individuals in the community that were especially selected to represent community leadership. They were interviewed informally to provide contextual and historical information. The data from the interviews with the key informats was analyzed separately and reported in the background section of the thesis.