CHILD FEEDING AND TODDLER MORTALITY IN SELECTED YORUBA VILLAGES

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ABSTRACT

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By

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Malnutrition of children resulting in high toddler mortality rates and suboptimal development is one of the major problems in developing nations today. Several studies in Yoruba villages have pointed out high child mortality rates and low nutrient intakes of children.

In this study of child care and nutrition in rural Yoruba villages, present child feeding practices, household dietary intakes, attitudes towards foods for infants, and child mortality rates were uncovered. Child feeding practices were related to child mortality rates. The relationships between the ages of mothers and child mortality rates and child feeding practices were studied. Responses given in two sub-cultures were compared. Variables relevant for further studies in child nutrition were uncovered and possible approaches for an applied nutrition program in the areas studied were suggested.

Literature is reviewed on the topics of malnutrition and toddler mortality, child mortality rates, the age of the mother as a variable, child feeding practices, intakes, and related cultural aspects.

Eleven villages, located close to the cities of Iwo and Ife in the rain forest belt of the Western State of

Nigeria, were selected. All households in each village were included in the sample. Within each household, one wife was interviewed according to a pre-set schedule of questions. One hundred and seventy-four women were interviewed. Data were analysed using percentages, the chi-square test, and the Pearson product-moment correlation.

Most of the women were married to farmers, were of child bearing age, were illiterate, and worked as petty traders. Very few had access to radio programs and no one had ever been contacted by a home economics extension agent.

Breast feeding is the preferred feeding method and goes on for more than two years when most babies are weaned of their own free will. Supplementary feeding usually begins by six months and, at first, consists of corn pap. Very few superstitious beliefs relating to foods for babies were found. Mothers lost almost one-third of all live births. Over half of the children who died were toddlers.

The following hypotheses were supported at the .05 level of significance:

• One-to-four-year-old mortality rates for mothers who give only starchy foods as the main supplementation will be higher than for mothers who give infants a variety of foods.

• One-to-four-year-old mortality rates are positively related to the ages at which children are first introduced to stew.

• There is no significant difference in the proportion of children lost as one-to-four-year-olds by literate and illiterate mothers.

Hypotheses predicting no relationship between age of respondent and toddler mortality rates and child feeding practices and attitudes were all supported. The hypothesis stating that Iwo and Ife mothers would not differ significantly as to the type of supplementary food given to infants was supported.

However, hypotheses predicting relationships between toddler mortality and time of weaning, distribution of animal protein, and number of foods thought appropriate for babies were not supported. Likewise, hypotheses predicting no significant differences between responses of Ife and Iwo women on number of foods thought appropriate for babies, the age at which stew is introduced to children, and weaning before, after, or at the same time the child learns to eat an adult diet were not supported.

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INTRODUCTION

Proper nutrition is basic to optimal health and, as such, is a subject of world wide concern. Coursin writes, "Undernutrition is the major problem affecting the well being of mankind in the developing countries of the world today." (10:1)

Malnutrition is especially detrimental to humans in the early stages of development, in early childhood. Many do not survive early malnutrition. The high mortality rates of one-to-four-year-olds in less developed countries are thought to be related to poor nutritional status. For those who do survive, deficiencies during early development may have lasting effects in terms of height, stamina, and brain function. In a review of research on undernutrition and brain function, it was concluded that, "If present estimates of the prevalence of undernutrition and possibly related sub-normal brain function are valid, the upgrading of mental ability by 10% to 20% could be the critical factor of bringing children in the developing countries to a level of performance that would immeasurably advance their productive capacities for self and nation." (10:13)

Child feeding habits are complex, the results of economic, sociological and cultural factors working together.

Knowledge about the background of the mother, the availability of foods, traditions, and food related beliefs and taboos helps build an understanding of child feeding practices.

In the Western State of Nigeria, as in other less developed parts of the world, child deaths are common occurrences. Everywhere, one sees children wearing bracelets and amulets and bearing names like, "We live here on earth." These children are abiku, believed to have died and returned to the womb time and again to torment their parents. One cannot be in contact with traditional Yoruba families without observing the loss of many children and particularly toddlers. Malnutrition is known to be a major contributor to toddler mortality (4, 28, 29, 17, 42). Even casual observation of Yoruba mothers pouring corn starch down their babies' throats suggests nutritional causes of mortality and points to the need for more applied nutrition programs.

FAO and WHO have emphasized the need for collecting adequate baseline data prior to the planning and evaluation of applied nutrition programs (50). This study of child care and nutrition in rural Yoruba villages was undertaken with a view to:

1. Uncover present child feeding practices, family dietary intakes, attitudes towards foods for infants, and child mortality rates.

2. Determine which variables and particularly which child feeding practices, if any, are closely related to

child mortality.

3. See whether mortality rates and child feeding practices differ according to the mothers' ages.

4. Compare the responses given in two sub-cultures.

5. Determine which of the variables are relevant for further studies in child nutrition.

6. Determine possible approaches a nutrition program might take in the areas studied.

In line with the objectives stated above, data were collected on the ages, educations, and occupations of respondents, their exposure to sources of information outside the village, the history of their child bearing, infant and child feeding practices, their attitudes to baby foods, and the types of foods eaten by the respondents' families.

REVIEW OF THE LITERATURE

There has been no study in Yoruba land which systematically relates the variables chosen for this thesis. There has been work in the Western State of Nigeria and other less developed areas which relates to some of the variables studied here. These variables include: malnutrition and mortality, child mortality rates, age of the mother, child feeding practices, attitudes, and intakes of children.

Malnutrition and Mortality

Williams describes malnutrition as an iceberg, with only its tip being apparent in mortality rates (52:5). A high child mortality means there is high morbidity. "Morbidity is a physical, mental, and economic burden on the community" (53:346). Others support the view that mortality of infants and young children is an indirect indicator of the general level of health and nutrition in a community (12:307, 24:374). Ahmed and Van Veen found that people consuming more complex diets lost a lower percentage of their children than did those with simpler diets (1).

While malnutrition may have some bearing on neonatal and infant mortality, it becomes a more important contributor to death after the first year (17:376, 42:112). In less developed countries, mortality of one-to-four-year-olds is often more than half of the infant mortality.

Deaths of one-to-four-year-olds or toddlers may equal or even exceed infant mortality (6:199, 17:358). Wills and Waterlow explain that infants and toddlers are equally exposed to disease; the difference in their mortality rates is due to malnutrition of the toddlers. They have proposed a mortality ratio of one-to-four-year-olds to zero-to-one-year-olds as an index of malnutrition (54). Using this index, Gordon writes that if the ratio is less than 5% it indicates good nutritional conditions. A 5% to 10% ratio indicates intermediate status and a ratio from 10% to 40% indicates a deficient nutritional state for a community (17:362).

Looking at the second-year death rate and food intake at the national level, Gordon showed that protein intake was negatively related to the second-year death rates up to intakes of 40 grams/capita/day. Fat intake was even more strongly correlated with second-year mortality, perhaps because fat intake is related to standard of living. There was relatively little relation between caloric intakes and second-year mortality (17:375).

Many others accept a high toddler mortality rate as being indicative of a high incidence of malnutrition (29). Malcolm reports a dramatic fall in the mortality of toddlers in New Guinea after a nutrition education program taught earlier supplementary feeding (28).

Although high toddler mortality rates and the presence of overt nutritional deficiencies often occur together (4, 17:372, 28), not all of the toddler mortality is directly

due to malnutrition.

Hendrickse writes, "After the neonatal period, morbidity and mortality occur principally as a result of infective disorders interacting with malnutrition." (20:253) Abundant evidence for the interrelatedness of nutritional state and infectious diseases in Africa is reviewed by Lowenstein (24).

Scrimshaw et al in their field study of nutrition and infection in Guatemala found that giving supplementary food to young children in one village reduced disease incidence and severity as judged by duration of illness. In another village where medical care and improved hygiene were provided without a nutrition program, disease incidence was not restricted, although case fatality was lowered (41). They found that the incidence of disease was directly related to the nature of weaning and the adequacy of the food provided (41). Furthermore, the incidence of major diseases reached its peak in the second year of life at the time of weaning (16:436). Clinical examination of children showed that case fatality and complications were related to the poor nutritional state of the patients (ibid.) Diseases where malnutrition was seen to play a part included diarrheal disease, measles, chickenpox, and particularly, malaria (17:372).

While poor nutrition seems to lower resistance to infection, infectious disease has been shown to precipitate nutritional diseases. Collis randomly selected Kwashiorkor patients in Western Nigeria and found that in almost all

cases, the actual symptoms of acute Kwashiorkor had been precipitated by infection (9:218). In other areas of West Africa, child mortality rates are high even where overt malnutrition is rare (15:49, 9:224). In Gambia, McGregor found that poor care leading to infection was likely to be the major cause of toddler mortality. He felt that disease probably caused malnutrition, but he did not look closely at dietary intakes (26:1661-1666).

Whether malnutrition or infection is more important as a contributor to toddler mortality is not an important issue. They have been shown to be interrelated. Two programs in West Africa, using a team approach, have demonstrated remarkable reduction of toddler mortality. Wilkinson in Sierra Leone, used a combined program of prophylactic drugs and vaccines and prevention and treatment of malnutrition to reduce the mortality rate of children up to the age of five from 332 to 156 per 1000 live births (50:172). A similar program in a Western Nigerian village reduced the infant mortality rate from 295 to 72 per 1000 live births and the toddler mortality from 277 to 43 per thousand living children aged one to four (31:82). In this program, mothers were taught to introduce supplementary foods by six months at the latest, and to introduce protein-rich foods by nine months. Bean dishes were to be given first, then once accepted, to be followed by meat in the same quantity as that taken by adults (31:85).

Seasonal factors have been shown to have some bearing

on toddler mortality. McGregor found that two-thirds of the deaths of young children occurred in the wet months (26:1662) when malaria is more prevalent. Thompson felt that seasonal factors may have been more important than weaning, or that weaning in the rainy season may have tipped the balance against a sick child's recovery and reduced resistence to disease (46:132). In Nigeria, the rainy season comes directly after the "hungry season" in April and May. In Eastern Nigeria, Dema and Osama found that fresh meat consumption in the hungry months is only 1% of what it is during the harvest months. Consumption of dry fish, dry beans and seeds, and leafy vegetables is also reduced (13:60). It may be that increased prevalence of disease following a period of nutritional deficiency is responsible for high infant and child mortality rates in the rainy season.

Overall lack of care of toddlers may be responsible for both poor nutrition and increased exposure to disease. Wills and Waterlow felt that infants and toddlers are equally exposed to disease (54) but this may not be so. Babies are usually carried, but toddlers are allowed to crawl and sit on the ground, sometimes eating dust as described by Williams in Ghana (51). This would make them more exposed to worms than babies are. In Gambia it was noted that toddlers are often left home when their mothers go to work in the fields. During the time mothers are away, they may not be properly fed or cared for (26:1665).

Gordon writes that more emphasis should be given to mortality in the second year than to infant mortality. By the time a child reaches his second year, he has survived the hazards of infancy, he is loved, and he represents an investment. Furthermore, he responds well to preventive measures (17:377).

Mortality Rates in Other Areas

Before presenting child mortality rates for the study villages, it might be well to have a look at rates for some other West African areas.

Gilles presented the following table (15:73):

TABLE 1

MORTALITY RATES IN RURAL WEST AFRICA

Rural Areas of West Africa	Neonatal/ 1000	Infantile/ 1000	Child (3 mo.-4 yrs.)/ 1000
Akufo (W. Nigeria)	50	109	430
Imesi (W. Nigeria)	78	114	572
Gambia	54	134	400
Senegal	-	172	344
Guinea	-	217	415

This shows that most of the child deaths occur after infancy. A closer look at Gilles' work in Akufo shows that most of the deaths in the first two years of life occurred from 15 to 20 months of age (15:72).

A slightly different picture, though still with a high ratio of 1-4 year mortality was shown by Edozien in Osagere, Western Nigeria (14):

TABLE 2

CHILD MORTALITY IN OSAGERE

Age	Number of Deaths per 1000 Live Births
Neonatal	67.6
1 month-1 year	67.6
1-2 years	27.0
3-5 years	40.6
Total	202.8

Also in Western Nigeria, Collis, in 1962, found the following for women in Ilesha villages (8:154):

TABLE 3

CHILD MORTALITY IN ILESHA VILLAGES

Average number of children per mother	4.2
Total live children	135.0
Total dead children	119.0
Child (up to puberty) death rate per 1000 births	468.0

In Lagos, in 1968, there were 38 infant deaths reported for every 1000 live births (44:575). This rate is low, but it may be seen by looking at the 1967 figures that the mortality of 1-4 year olds almost approaches the infant mortality: there were 1796 infant deaths and 1155 deaths from 1-4 years of age (44:596).

Child Feeding Practices, Attitudes, and Intakes

Most of the studies of infant and child feeding practices found were devised as a baseline for further work, and did not attempt to relate practices to mortality. For example, Rao interviewed nursing mothers in order to see what supplementary diets would be acceptable and how best to

formulate a program (38).

Whiteman studied attitudes towards breast and bottle feeding in New Guinea and found that 58% of the mothers thought breast feeding was better, 19% preferred the bottle, 16% didn't know which was better and 8% felt both were equally good. Those who preferred breast feeding mentioned that it was less expensive and more convenient than bottle feeding that it allows the baby to benefit from the food the mother eats, and that it was their custom to breast feed (48:161). Wennen writes of the decline of breast feeding in Nigeria, pointing out that 12 of 27 mothers at one clinic were carrying feeding bottles. However, he did not ask what was in the bottles or how frequently they were used (47).

Earlier, Jelliffe reported the long duration of breast feeding in Nigeria and the copious supply of milk (22:63). Since then, evidence has been accumulating to indicate that in fact, milk secretion may be inadequate in Nigeria. Edozien reports very low outputs of from 250-600 ml. per day with a mean of 500 ml. per day. Bassir found a mean of 500 ml. per day as compared to 800 ml. for European standards. He points out that this shortage of volume would mean a loss of 9% of the potential protein nitrogen and would make mothers' milk alone inadequate for a four-month-old baby. Furthermore, there seems to be a gradual decrease in milk production after six months. This is about the time Nigerian babies experience a lag in growth as compared with North American and European babies (37:37-39). Morley reported that in Imesi, there was insufficient breast milk for 20% of the

children studied (32:190).

Beliefs and taboos related to foods have been studied in some areas. For example, among the Chimbu in New Guinea, Whiteman found that food taboos were not as important an obstacle to good nutrition as was the lack of understanding of the relationship between diet and health (49). In Kenya, Ojiambo uncovered superstitions such as: feeding babies meat makes them greedy; eggs retard babies' development; and vegetables, sweet potatoes, maize and beans lead to bowel trouble. He found that the list of foods forbidden to babies far exceeded those allowed (36:521). Hauck reported the beliefs that bananas give babies worms and eggs make children steal in Eastern Nigeria, but she said these beliefs were not universally held (19:328).

Age of introduction of supplementary foods tends to be late in many less developed areas. Guthrie reports 12-18 months as the median age for giving solid foods in the Philippines. This was about the time of weaning (18:167,168). Ojiambo found a wide range of ages for introducing solids in Kenya, the most popular ages being 6 months and 1 year. In Buganda it was reported that 63% of the mothers sampled weaned directly to an adult diet without using any special food, and that 25% of the mothers weaned babies without having introduced them to any supplementary foods (33:159).

In Eastern Nigeria, Hauck found that babies were generally introduced to hot corn pap by 4-6 months. This was followed by thicker pap which was followed by yam and

sometimes palm oil by 12-18 months (19:328). Breast milk would have been the main source of protein.

A more quantitative study of child feeding practices was done by Jelliffe in Ibadan, Western Nigeria (22:64). He recorded the percentage of children in various age groups who were being given semi-solid food in addition to breast milk. The results for 208 children were:

TABLE 4

PERCENTAGE OF IBADAN CHILDREN GIVEN SUPPLEMENTARY FOODS

Age	Percent Given Food
4-6 months	14
7-9 months	45
10-15 months	80
16-24 months	100

The foods most commonly given are shown below. In a few cases, beans were given. Babies only rarely got fruits or eggs, and none were given meat or fish.

TABLE 5

SUPPLEMENTARY FOODS GIVEN TO IBADAN CHILDREN

Food	Percent of Children Taking Foods
Maize gruel (ogi)	100
Boiled yam and yam flour porridge	40
Bread	30
Boiled Rice	20
Cassava-meal gruel	12

Morely found that corn pap was introduced at about five months at Imesi and that the next important food to be introduced was bean pudding at 10 months (32:184). He

compared the age of introduction of solid foods for both well nourished and malnourished children and found them to be similar. He concluded that dietary factors are not the only important causes of malnutrition (32:191).

Ogi or hot pap was the most important supplementary food reported by Hauck, Jelliffe, and Morely. It is prepared as follows: maize seeds are soaked one to two days in tepid water, wet-milled, and sieved to remove fiber and hulls. The filtrate is allowed to settle and become sour. The sediment is then diluted to about 10% solids in water and then boiled into a pap or gel (2). During this process, about 40% of the protein, 50% of the calcium and 75% of the phosphorus are lost (37:30). Fermenting the ogi does increase the protein and B vitamin content, but not enough so as to make up for initial losses. Although digestibility is increased slightly, Net Protein utilization, Protein Efficiency Ratio, and Biological Value are decreased (2).

The problems of child nutrition in Nigeria do not end when the child is finally weaned onto an adult diet. Nicol reports a high incidence of positive signs of malnutrition in Western Nigeria. Most of his subjects were children (35:124). Oke pointed out that it is not so much the nutritive value of the food, as the distribution of food within the family which is so very poor. Members of the family whose bodies are already developed get more than they need at the expense of members who are still growing (37:28, 29). McFie says that all over Nigeria, the nutrient intakes

of children, particularly in relation to their calorie requirements, is poorer than that of adults (25). Earlier, Nicol said, "The parents in most of rural Nigeria do not realize the needs of growing children." (34).

Without clinical investigations and longitudinal studies of growth, it is impossible to evaluate the health status of children. However, mortality rates do indicate a definite failure to keep children healthy although they do not reflect marginal ill-health. Therefore, it is expected that mortality rates for one-to-four-year-olds will be related to child feeding practices and attitudes. Thus, the following hypotheses were set and considered.

H_1: Women who wean their babies before or at the same time the children learn to eat an adult diet will lose more of their children as one-to-four-year-olds than women who wean after the introduction of a complete diet.

H_2: Women who give children as much animal protein as they give themselves will lose fewer one-to-four-year-old children than women who give a relatively small share to the children.

H_3: One-to-four-year-old mortality rates for mothers who give only starchy foods as the main supplementation will be higher than for mothers who give infants a variety of foods.

H_4: One-to-four-year-old mortality rates are inversely related to the number of foods a mother feels are appropriate for babies.

H_5: One-to-four-year-old mortality rates are inversely related to the ages at which children are first introduced to stew.

Age of the Mother

Coale writes, "The past two decades constitute a period of extremely rapid declines in mortality in many of

the less developed countries of the world, as low cost but effective techniques of medicine and public health have been exported to these areas..." (7:185). Where changes in health care have occurred, one would expect young women to lose fewer of their children than older women.

Couvee found in New Guinea that menopausal women had lost a slightly higher percent of their children than had fertile women, and that they lost 10% more children after they had walked than had the younger women (11:331). Ardener reports that the percentage of a woman's children born that died under two years of age increased with the age of the woman from 10% for 15-19 year old mothers to 29% for women 50 or more years old. In a Western Nigerian village, Monekosso reports that the percentage of a woman's children surviving decreased with the age of the woman (30:50).

However, where health care has not changed or where improvements have not reached people, one would not expect to find changes in mortality rates over time. Wilkinson reports that even fairly large hospitals do not radically alter disease patterns of young children in rural areas of Sierra Leone, because the hospitals are not easily accessible (50:172).

Changes towards modernization have been found to bring changes in diet (5). Where such changes are going on in the Andes, it was found that older families tend to maintain simple, traditional diets whereas younger families are adopting more complex diets. However, the younger families

also have more education, and education was thought to be more important than age in terms of dietary changes of the whole family (1:94). In Mexico, age of the mother was found to be positively correlated with age of weaning, and level of education was negatively correlated. Of the two variables, age was more related to weaning period than was education (40:446).

Because child care and nutrition are not taught in most Nigerian schools, it was expected that there would be no difference in child mortality rates for literate and illiterate mothers, and so the following hypothesis was set:

H_6: There is no significant difference in the proportion of children lost as one-to-four-year olds by literate and illiterate mothers.

Although there has been a great deal of progress in Nigeria in terms of education, economics, and health facilities, there is reason to believe that little of this progress has had any impact on rural women. A comparison of responses for old and young women would indicate whether or not this is true, and whether important changes have occurred over time.

H_7: There is no relationship between the ages of the respondents and the proportion of children lost as one-to-four-year olds.

H_8: There is no relationship between the age of the respondent and whether she weans her child before, after, or at the same time the child learns to eat an adult diet.

H_9: There is no relationship between the age of the respondent and the proportion of animal protein given to her children.

H_{10}: There is no relationship between the age of the respondent and the type of supplementary food given to infants.

H_{11}: There is no relationship between the age of the respondent and the number of foods thought appropriate for babies.

H_{12}: There is no relationship between the age of the respondent and the time at which she introduces her infant to stew.

Yoruba Culture

Leighton and others have described some of the salient perceptions, beliefs, and feelings of the Yoruba in the Abeokuta area. Many of these apply to the Iwo and Ife villagers, and several are pertinent to a consideration of child care and nutrition programs.

"Success is counted in children, wives, houses, money, land, titles, and good standing with one's neighbors. All of us--adherents to traditional beliefs, Muslims, and Christians--believe in an after-life in which people are judged as good or bad. The here and now is, however, important in its own right." (23:37) Of all the things which are valued, children are most important.

"Our world as women centers on children." (23:47) Children provide women with fulfillment, insure their status and their husbands' houses, and give security for old age. "Since our world as women is centered on children, it focuses on the future, but we can help them by continuing to practice many of our old ways." (23:49)

There are other sentiments which should be considered in terms of planning a change program. "Health is precious to all of us." (23:51) "There are many changes coming which

promise a better life for us. But we had better not become so enchanted with the new as to depart radically from the old customs and beliefs." (23:37) This is particularly true as regards health practices. Modern medicine is not so available as to allow follow-through and complete treatment, and so people must return to old remedies.

Iwo and Ife people belong to two distinct subcultures. If there are no significant differences between responses from the two sets of villages, then the data on practices and beliefs may be generalizable to other Yoruba areas.

H_{13}: There are no significant differences between responses of Ife and Iwo women on the following variables: a) number of foods thought appropriate for babies; b) the age at which stew is introduced to children; c) the feeding of starch alone or a variety of supplementary foods; d) weaning before, after, or at the same time the child learns to eat an adult diet.

METHODOLOGY

The Questionnaire

The author developed a questionnaire which three people independently translated into Yoruba. The three translations were then combined by a fourth party into one version which was translated back into English to check the closeness of meaning. The combined Yoruba version was then pretested on ten illiterate volunteers in the cities of Iwo and Ife. City rather than village women were interviewed for the pretest so as not to contaminate the sample. It was known that they do not differ from village women in terms of language and culture. Several alterations had to be made after the pretest. For example, it was found that when asked, "How old were your children when you weaned them?", mothers gave very vague, general responses. This was corrected by asking specifically about the last child weaned. The ordering of the questions was improved during the pretest so as to maintain the respondents' interest and cooperation.

The final questionnaire is shown in the appendix. When age was not known, respondents were asked to tell who were the kings of their home towns at various stages of their lives. This information was later checked with local historians to determine ages.

Questions about the history of the respondents' children might be prone to all the shortcomings of a retrospective survey. Accuracy may be influenced by forgetfulness as well as reluctance to disclose personal information (50: 168). However, mortality rates based on retrospective reports have been found to be consistent with rates calculated from the age composition of a population (7:179). Morley asked mothers about the outcomes of their last pregnancies. He questioned them more than once over intervals of six months and then checked the information with other relatives. He found consistency among the responses (31:82). For these reasons, it was thought that the method of gaining demographic data on the children would be reliable. The percentage of total live births lost as one-to-four-year olds was used as an indication of malnutrition.

Since it was known from quantitative dietary studies (9, 25, 35) that large amounts of starchy foods were consumed by all age groups, Section E on opinions and foods concentrated on animal proteins, vegetable proteins, fruits and vegetables.

Information on dietary intakes was collected by the twenty-four-hour recall method. This method has been used by other workers where quantitative data are not necessary (28:48, 40:443). A village study comparing intake measured by observation and that measured by recall showed no significant difference in results (38).

Most of the questions were open-ended. Though this made analysis more difficult, it was hoped that it would

result in more accurate answers and suggest ways of working with existing attitudes and beliefs in a nutrition program. Many of the open-ended questions were funnels, or sequences leading from the general to the specific.

Sampling

The University of Ife had randomly selected a group of villages near Ife for a socio-economic survey and community development project. It was thought that if part of the child care survey were done in these same villages, the two sets of data would complement each other. Both sets of data were gathered independently but in the same villages.

A comparable set of villages was wanted in another sub-culture. The Iwo area was chosen because no similar surveys had been done there and because the cooperation of the villagers was assured. Of those which were close enough for the author to reach every day, three groups would have been suitable for a community development project. The group of villages most comparable to the Ife site held its main market at Akinbami, which is located on a major road. The other Iwo villages studied were Olowu, Magboyide, Obojona, Akuru, Akayo, and Alabata. The Ife villages were Iyanforogi, Erefe, Ladin, and Aroko. Ife villages were larger, and so, fewer of them were needed to provide an approximately equal sample from each area.

In each village, all households were included in the sample. In each household, one woman was chosen. The only

criterion for being chosen was having been married at some time. Thus, in addition to mothers of young children, the sample included new brides who had not given birth, older married women who had no children, and widows. The reason for including these women as well as women in the latter group was that they were likely to be responsible for the care of some relative's children.

With one exception (the result of language barrier), the first married woman encountered by the interviewer in each household was the one chosen. Interviewers went to the villages at all times of day, so that they would not always meet women of the same ages and occupations. For example, at nine o'clock in the morning, when petty traders and farm women are at work, most of the women at home would be old or sick or engaged in occupations other than trading and farming. By the same token, since many occupations are seasonal and since there are seasonal variations in dietary intakes, interviews were spread over the twelve months of 1969.

Ninety women in four Ife villages and eighty-four women in seven Iwo villages were interviewed. All of the villages are located in the rain forest belt of the Western State of Nigeria.

The Yoruba are city residents. People who have farms too far away from the city for daily commuting built villages near the farms. Those who spend most of their time in farm villages consider their farms to be extensions of their city compounds. Usually all the houses in a village

belong to people from the same city. Thus, the traditions peculiar to a given Yoruba city are also found in its villages.

Modern amenities such as pipe borne water, electricity, and hospital services are lacking in the villages studied, though they are available in the two cities, and so village people are aware of them. There is a lot of commuting from the villages to the cities. People go "home" to sell farm produce, to visit relatives, the attend the hospital, and to observe religious and other celebrations. During important Muslim holidays, some Iwo villages may be completely deserted.

The village of Olowu appears to be typical of the villages studied. Approaching Olowu from the road, one is first struck by the brownness of the village in contrast to the lush green of the surrounding cocoa plantations and forest. The houses, made of mud, are the same color as the ground which is kept clear of vegetation. The roofs are mostly corrugated metal, but rust makes them brown,too. Only occasionally does one see a plastered house.

Towards evening, the air is full of the scent of wood cooking fires and palm oil. Here and there one hears the dull thud of pestle on mortar, pounding yam. Men come back from their farms, carrying their cutlasses and short-handled hoes. Women and children come home carrying baskets of harvested food on their heads. Women traders come back from market with their wares on their heads and babies on their backs.

Throughout the village, those who have stayed home greet those who are returning, "Welcome, did you sell? I hope everything is alright." Small groups gather to chat at the tailor's and carpenter's houses while supper is being prepared.

Data Collection

Three people besides the author worked as interviewers. They included one secondary school student and two university students. They received training, practice, and supervision before they began collecting data on their own. Interviews were conducted in Yoruba and the secondary school student recorded in Yoruba.

Women were interviewed in their homes. Reddy found that one can get more information from mothers in the relaxed atmosphere of their own homes (39). The main problem with this approach was one of securing privacy, since the presence of interviewers in the village always attracted a large crowd. Due to the personal nature of the questions, the interviewers had to repeatedly ask onlookers to leave, promising that once the interviews were completed, they would read the questions to anyone interested.

Statistical Analysis

As a result of the kind of sampling we did within the household, the statistical analysis has been restricted to non-parametric statistics. The hypotheses were tested using the chi-square test (27:212-242). This test procedure does not require any distribution--that is, it is distribution-free.

Consequently, there is no need for the sampling procedure to conform absolutely to the books. It is claimed, however, that the sampling procedure is a nested random sample: Within a village, a complete enumeration of households was undertaken, and within a household a woman was chosen in such a way as to introduce chance elements by varying the time of visit. This claim was, however, not necessary for our analysis which used chi-square--a non-parametric statistic--which can be used to study relationships and differences (27:357).

In order to use the chi-square test, the data were tabulated in a frequency distribution. This frequency distribution then formed the observed data. The marginal distributions (row and column totals) were then used to calculate the expected frequency. For example, if the following distribution were observed,

	1	2	Total
1	n_{11}	n_{12}	$n_{1\cdot}$
2	n_{21}	n_{22}	$n_{2\cdot}$
3	n_{31}	n_{32}	$n_{3\cdot}$
Total	$n_{\cdot 1}$	$n_{\cdot 3}$	$n_{\cdot\cdot}$

the expected distribution would be computed by using the formula,

$$n_{ij} = \frac{n_{i\cdot}\, n_{\cdot j}}{n_{\cdot\cdot}}$$

where i refers to rows and j refers to columns, so that for n_{11} one has $\frac{n_{1\cdot}\, n_{\cdot 1}}{n_{\cdot\cdot}}$ and for n_{32} one has $\frac{n_{3\cdot}\, n_{\cdot 2}}{n_{\cdot\cdot}}$.

After the expected distribution had been computed, the chi-square formula, $\chi^2 = \sum \frac{(O-E)^2}{E}$, was used to compute the various chi-square values shown in column 2 of Table 31. This formula merely says that one subtracts each expected value from the corresponding observed value, squares the difference and then divides the square by the expected value, repeats for each expected value and adds all the results. This computed chi-square is then compared with the tabulated ones (43:28-29) using the appropriate levels of significance and degrees of freedom which are computed as the product of number of rows minus one and number of columns minus one. In Table 31, three different levels of significance were used for testing each of the hypotheses.

The rationale behind using the chi-square is as follows: If there is no relationship between the row variable and the column variable, the expected frequency distribution generated by using the marginals will not be significantly different from the observed frequency distribution, and one will therefore expect the computed chi-square to be close to zero. If the computed chi-square is less than the tabulated one, it is concluded that there is no significant relationship between the row variable and the column variable. But if the computed chi-square is larger than the tabulated one, then there is a significant relationship.

Since the chi-square test does not tell us the direction of relationship, the Pearson product moment correlation coefficient (27:115-143) was computed in cases where

the direction of relationship was wanted.

Data for purely descriptive purposes were hand-tabulated and the numbers and sometimes the percentages were presented.

RESULTS

Description of Respondents

Most of the women interviewed were of child-bearing age. The Iwo sample contained a higher proportion of very young and very old women than the Ife sample, as shown in the table below.

TABLE 6

AGES OF RESPONDENTS

Age in Years	Iwo		Ife		Both	
	No.	%	No.	%	No.	%
16-25	18	21	6	7	24	13.79
26-35	29	35	40	44	69	39.65
36-45	17	20	35	39	52	29.90
46-55	10	12	6	7	16	9.20
56-65	5	6	2	2	7	4.02
66+	3	4	0	0	3	1.72
Not known	2	2	1	1	3	1.72
Totals	84	100	90	100	174	100.00

Most of the wives worked. The most common occupation was petty trading which included food vending, selling native soap, and selling odds and ends such as matches. A large group of women were farmers. Some were engaged in unskilled labor, jobs needing no apprenticeship, such as collecting palm fruits. Some of the women were big traders who traveled a lot in their work. This group included produce buyers. A few women combined farming with other work and a few were

engaged in skilled labor such as palm oil processing. Only four respondents were housewives alone.

The largest majority of the respondents' husbands were farmers. They grew both cash crops such as cocoa and kola nuts and food crops. Several of them combined farming with large trading operations. A few were salary earners. This group included soldiers, teachers, and clerks. Other occupations may be seen in Table 7.

TABLE 7

OCCUPATIONS

Occupations	Number in Each Category	
	Wife	Husband
Petty trader	79	--
Farmer	39	117
Unskilled laborer	18	1
Big trader	13	--
Farmer and big trader	--	10
Farmer and laborer or petty trader	11	10
Skilled laborer	10	8
Regular employee of government or business	--	6
None	4	2
Totals	174	167

Only thirty-two women interviewed had ever gone to school. Twenty-two of these were literate. Table 8 shows that several women did not attend school for very long. The highest level of school completed was Class VI, the equivalent of twelfth grade.

TABLE 8

EDUCATION OF RESPONDENTS

Years in School	Number of Women
1-3	11
4-6	11
7-9	7
10+	3

As shown in Table 9, very few women had access to radio programs in the villages. However, a few mentioned that they had rediffusion at home in the cities. A larger proportion of women said they had watched a film at least once. These films were either Indian dramas shown in the cities or educational programs brought to the villages by the Ministry of Information. Only 16 women had ever been contacted by change agents on the subject of child care and feeding. These agents were mostly nurses, and not home economics extension agents.

TABLE 9

EXPOSURE TO OUTSIDE SOURCES OF INFORMATION

	Number	Percent
Had radio in the village	12	7
Had ever seen a cinema	78	45
Had been contacted by agent	16	9

Feeding of Children

Many women felt that they had never been taught to care for their children. In the Ife villages, thirty-nine percent of the women said either that God or no one had taught them child care practices. Seventeen percent of the

Iwo respondents gave that answer. Iwo women seemed to have a clearer perception of child care as something to be learned and taught. Seventy-three percent said they were taught by their mothers, mothers-in-law, and other elders, as compared with forty-seven percent in the Ife villages. Only seven percent in the Ife villages and eight percent in the Iwo villages said they received training from medical personnel. Almost all of the respondents said they would like to learn new ways of feeding and caring for children.

At the time of the interviews, many of the women were nursing babies: fifty-one percent in Ife and 36% in Iwo. The difference between the two sites reflects the difference in age distribution.

Table 10 shows the respondents' preferences for bottle or breast feeding. Considering that most of the women who offered no opinion did not know what a feeding bottle was, there is a marked preference for breast feeding.

TABLE 10

PREFERRED FEEDING METHODS

Response	Iwo		Ife	
	Number	Percent	Number	Percent
Preferred breast feeding	36	43	34	38
Preferred bottle feeding	6	7	3	3
Both equally good	6	7	19	21
No answer or can't say	36	43	34	38

The main reason given for preferring breast feeding was that it is the natural method, what God provided for babies. Other advantages cited were lower cost, better growth rate,

convenience, and tradition. Some women were aware that breast feeding allows the baby to benefit from the food the mother eats, and that it strengthens affective ties between mother and child.

Those who preferred bottle feeding said that it provides "real food" prepared by machine; it allows for easier regulation of the number of feedings; it is more hygienic; and it does not limit the child to the mother's supply of milk. Those who felt that both methods were equally good said that occasional bottle feeding gives the mother some freedom; it can supplement insufficient breast milk; and it allows them to "follow the advice of educated people" and at the same time to use the natural method.

Thirty percent of the respondents in the Iwo villages and fifty percent in the Ife villages had at some time used a feeding bottle. Thus, it is seen that in both areas, less than half who had used one thought it was as good as or better than breast feeding.

Table 11 shows the types of liquids fed by bottle.

TABLE 11

TYPES OF LIQUIDS FED BY BOTTLE

Liquid Given by Bottle	Number of Women Mentioning It
Lactogen and other milk products	49
Hot corn pap	33
Water	16
Glucose	9
Commercial baby cereal	8
Native medicine	4
Egg	3

The most common reason for use of the bottle was to avoid the dangers of forced feeding whereby hot pap and native medicine are usually poured down the baby's throat. The next most important reason was instructions from a nurse or doctor at the hospital or maternity clinic. Other reasons may be seen in Table 12.

TABLE 12

REASONS FOR USING A FEEDING BOTTLE

Reason	Number of Respondents
Easier feeding	31
Maternity instructions	14
It is good, or they say it is good	13
Saw others do it	8
Freedom, travel	5
Hygiene	3
To give something hot	2
Variety from breast	1
Pregnancy	1

Most of the babies were weaned between the ages of two and four years. Table 13 shows that only one woman, the one who became pregnant very early, weaned her baby before he was a year old. Most Ife women weaned their babies after the second birthday, but Iwo women tended to wean after the third birthday.

TABLE 13

AGE OF WEANING

Age of Weaning	Iwo		Ife	
	Number	Percent	Number	Percent
Less than 1 year	1	1	-	-
1 year-1 year, 11 months	5	6	12	13
2 years-2 years, 11 months	23	27	49	54
3 years-3 years, 11 months	37	44	17	19
4 years +	3	4	2	2
Not applicable	15	18	10	12
Totals	84	100	90	100

The most common method of weaning was to make snacks available to the child and to allow him to give up the breast of his own free will. Fifty-two percent of all respondents who had weaned a child said they used this method. Rubbing bitter leaf on the breasts was the next most popular method, used by twenty-seven percent. Refusal was used by nineteen percent. Only two percent of those who had weaned a baby did so by replacing breast milk with Lactogen or some other milk product. Two of the respondents in the Ife villages and ten in the Iwo villages sent their children away to their grandmothers during the time of weaning.

The most frequently mentioned weaning food was bread. Others were eggs, ground nuts, sweets, rice, beans, and corn pap. Milk was mentioned in Ife but not in Iwo.

Table 14 shows the ages at which children of Iwo and Ife mothers were able to eat a complete adult diet. It may be seen that the Ife children were given full diets much earlier than those in the Iwo villages.

TABLE 14

AGE OF INTRODUCTION TO ADULTS' FOODS

Age	Iwo		Ife	
	Number	Percent	Number	Percent
Less than 1 year	0	0	1	1
1 year-1 year, 11 months	6	7	44	49
2 years-2 years, 11 months	15	18	24	27
3 years-3 years, 11 months	18	21	6	7
4 years +	16	19	1	1
Not applicable	29	35	14	15
Totals	84	100	90	100

On the whole, Iwo mothers tended to wean before the child was given a complete diet, but Ife mothers weaned after. This can be seen from Tables 13 and 14 above. In Ife, 50% of the 1 year to 1 year, 11 months group were given adult food, but only 13% of them were weaned compared with 6% and 7% respectively in Iwo.

Most mothers began supplementary feeding by the time their babies were six months old. Table 15 shows that the ages at which supplementation was first introduced were about the same for both groups. Those who said they began feeding before one month actually gave native medicine, not food.

Foods which were mentioned as having been given before the child could eat a full adult diet are shown in Table 16. Corn pap was the most frequently mentioned, whereas meat was not an important item. Ife women had a greater tendency to mention commercial products such as milk and baby cereals.

TABLE 15

AGE OF FIRST SUPPLEMENTARY FEEDING

Age in months	Number of Mothers Iwo	Ife	Both	Percent for Both Ife and Iwo
Less than 1	28	25	53	30
1-3	7	10	17	10
4-6	23	10	33	19
7-9	8	9	17	10
10-12	1	1	2	1
13+	10	13	23	13
Not applicable	13	16	29	17
Total	90	84	174	100

TABLE 16

SUPPLEMENTARY FOODS MENTIONED

Foods	Number of Women Iwo	Ife
Corn pap	53	69
Lactogen and other milk products	12	30
All soft foods	6	10
Yams	13	-
Eggs	8	3
Beans	6	3
Bread	4	3
Commercial Baby Cereals	1	6
Glucose	-	7
Fruit	5	-
Rice	2	3
Pepper sauce	2	3
Meat	3	2
Cottage Cheese	2	-
Plantain	2	-

Since the question on supplementary foods was vague and answers depended on what the mothers thought was important, a specific question on the age at which the child was introduced to stew was included. The median interval for Iwo mothers was 10-12 months, for Ife mothers it was 4-6 months.

Thus, the Iwo mothers began to introduce their babies to what may be considered the staple diet about six months later than did the Ife mothers.

TABLE 17

AGE OF INTRODUCTION TO STEW

Age of baby in months	Number of Mothers Iwo	Ife
Less than 1	0	5
1-3	5	19
4-6	17	22
7-9	11	15
10-12	14	4
13+	26	15

Dietary Intakes

The evening meal was the heaviest, the one requiring the most preparation in about two-thirds of the Ife households and three-fourths of the Iwo households.

Some form of animal or pulse protein was served at almost every meal. At breakfast, about ninety percent (Ife 90%, Iwo 91%) of the families consumed protein, usually in the form of beans. In most households, the afternoon and evening meals were usually based on animal protein cooked in a stew and supplemented with melon seeds and locust beans. At lunch, fifty-six percent of the Ife households and seventy-seven percent of the Iwo households had some meat, fish, or poultry. In the evening, sixty-six percent of the Ife families and seventy-six percent of the Iwo families served animal protein. A much larger number of families in Ife did without animal protein on the day before the interview.

Of those respondents who had children living with them, seventy-one percent at Ife and 72% at Iwo said they gave the children less meat than the adults. The amount of meat, fish, or poultry eaten by adults was very small, usually just one piece.

Almost all of the respondents served green vegetables during the day, and most of them served vegetables twice or more. Most of the vegetables eaten came from the consumers' farms.

Only ten percent of all respondents said they had eaten fruits. Seven percent mentioned the use of milk products in the home, usually Lactogen for babies or milk for their husbands' tea. Eggs were mentioned by four women in the Iwo area, but no one in the Ife sample had eaten eggs.

Vendors sold breakfast foods to sixty percent of the Ife respondents and to forty-two percent of those in the Iwo area. In the afternoon, only twenty-four percent at Ife and five percent at Iwo villages bought food from vendors. In the evening, eleven percent of the Ife women and two percent in Iwo villages bought food from vendors. In each area, only two percent of the women bought snacks from vendors.

Attitudes Towards Foods for Babies

Many high protein foods were considered inappropriate for babies on the grounds that the children have no teeth, they do not know how to eat the foods and there is no need for them to eat the foods. Thus, all types of meats,

ground nuts, crayfish, groundnut balls, and bean cakes were not thought suitable for babies. A few people felt that these same foods plus okra and eggs cause piles and loose stools. Twenty-five respondents felt that meat, poultry, fish, and snails cause worms in babies but not in older people. Three people felt that feeding fish, meat, and eggs to babies causes them to be greedy, or even to steal. However, it was explained that this was because those foods are luxuries and a baby who is fed them may develop expensive tastes which cannot easily be satisfied.

Tables 18, 19, and 20 show some of the reasons certain foods were thought unsuitable for babies.

TABLE 18

WOMEN WHO FELT FOODS WERE INAPPROPRIATE BECAUSE BABIES HAVE NO TEETH

Foods	Number	Percent
Meat, Fish, Poultry	49	28
Snails	60	34
Crayfish	46	26
Groundnuts	45	26
Melon Seed Cakes	54	31
Beans	12	7
Bean Cakes	21	12
Papaya	31	18

TABLE 19

WOMEN WHO FELT SOME FOODS GIVE BABIES WORMS

Foods	Number	Percent
Meat, Fish, Poultry	24	14
Snails	3	2
Okra	1	1
Eggs	1	1

TABLE 20

WOMEN WHO FELT SOME FOODS CAUSE PILES AND LOOSE STOOLS

Foods	Number	Percent
Peanuts	14	8
Meat, Fish, Poultry	5	3
Okra	2	1

Vegetables, locust seed, melon seed in stew, beans and bean pudding were not widely objected to, providing the baby is able to take the pepper in them.

Most fruits were thought to be good for babies, though it was often expressed that guavas are only good for literates. Several respondents did not know what local cottage cheese (wara fulani) was.

With the exception of the idea that animal protein foods cause worms, it may be said that there were almost no superstitious beliefs related to foods for babies. On the other hand, there was a widespread attitude that if God meant babies to eat certain foods, He would have provided the necessary equipment (teeth).

Mortality of Children

Table 21 gives mortality figures as reported by respondents for the Iwo and Ife areas separately and for the total sample. Ten women in the sample had never given birth. For the 164 women who had, the average number of live births was 3.2. On the average, each woman lost one child (.96 deaths per woman). About a third of these deaths

occurred in the first year of life, but over half occurred from the ages of one to four years.

Total child mortality was much higher in the Iwo villages than in the Ife villages, but the ratio of one-to-four-year-old mortality to infant mortality was only slightly higher in the Iwo area.

TABLE 21

MORTALITY FIGURES

	Iwo	Ife	Both
Total Live Births	264	275	539
Number of Deaths by Age Group			
0-1 year	30	23	53
1-4 years	53	36	89
5+ years	8	8	16
Total Child Deaths	91	67	158
Mortality Rates/1000 Live Births by Age Group			
0-1 year	114	84	98
1-4 years	201	131	165
All ages	382	244	293
Age Groups as Percent of Total Mortality			
0-1 year	33	34	34
1-4 years	58	54	56
Ratio of 1-4 year old mortality to 0-1 year old mortality	1.76	1.56	1.68

Testing of Hypotheses

Relationships Between One-to-Four-Year-Old Mortality and Child Feeding.

H_1: Women who wean their babies before or at the same time the children learn to eat an adult diet will lose more of their children as one-to-four-year-olds than women who wean after the introduction of a complete diet.

Comparisons were made among toddler mortality rates of women who weaned their children before, after, and at the same time their children could eat full adult diets. Table 22 shows the proportions of deaths in the one-to-four-year-old group for mothers in each category

TABLE 22

ONE-TO-FOUR-YEAR-OLD MORTALITY IN RELATION TO TIME OF WEANING

Time of Weaning Relative to Time of Introduction of Adult Diet	Total Live Births	Number of Deaths Ages 1-4 years	Percentage of Total Live Births Lost as 1-4 year olds
Before	123	18	14.63
Same	129	31	24.04
After	227	46	20.26

Women who weaned before the child could eat a full diet lost fewer of their toddlers than those who weaned after, but those who introduced a full diet at the time of weaning lost a higher proportion than those in either of the other categories. The differences among the three categories were small. The computed χ^2 of 3.5472 was not significant at either the 5% or 10% level. Thus, hypothesis 1 is rejected.

H_2: Women who give children as much animal protein as they give themselves will lose fewer one-to-four-year-old children than women who give a relatively small share to the children.

This hypothesis was not supported. In fact, looking at Table 23, one can see that in households where animal protein was served on the day prior to the interview, those who gave children the same amount as they ate had actually lost more of their toddlers.

TABLE 23

ONE-TO-FOUR-YEAR-OLD MORTALITY IN RELATION TO DISTRIBUTION OF ANIMAL PROTEIN

Amount of Animal Protein Served to Children in Comparison with Mother's Portion	Total Live Births	Number of Deaths Ages 1-4 Years	Percentage of Total Live Births Lost as 1-4 year olds
Less	262	32	12.21
Same	90	16	17.78
None served in Household	94	19	20.21

Although this finding is the opposite of what was expected, the relationship between proportion of meat served and proportion of toddler deaths was not significant at the 5% or 10% levels.

H_3: One-to-four-year-old mortality rates for mothers who give only starchy foods as the main supplementation will be higher than for mothers who give infants a variety of foods.

Table 24 shows that a higher proportion of toddlers was lost by mothers who fed only starchy foods for supplementation.

TABLE 24

ONE-TO-FOUR-YEAR-OLD MORTALITY IN RELATION TO TYPE OF SUPPLEMENTARY FOOD

Type of Supplementation	Total Live Births	Number of Deaths Ages 1-4 Years	Percentage of Total Live Births Lost as 1-4 year olds
Starchy	330	65	19.70
Variety	188	22	11.70

The computed χ^2 was 89.5491 which was significant at the 5% level. Thus, hypothesis three was supported.

H_4: One-to-four-year-old mortality rates are inversely related to the number of foods a mother feels are appropriate for babies.

No relationship was seen between the two variables. While the Pearson product moment correlation showed a slight tendency for proportion of deaths to increase with number of foods thought appropriate (r=.141639), the computed χ^2 of 21.7349 was not significant even at the 25% level.

H_5: One-to-four-year-old mortality rates are positively related to the ages at which children are first introduced to stew.

This hypothesis was found to be supported. The computed χ^2 of 96.3489 was significant at the 5% level. The Pearson product moment correlation, though small (r=.181141), was positive.

In summary, of the predicted relationships between toddler mortality and child feeding practices, only those concerned with the type of supplementary food and the age of introduction to stew were supported.

Relationship between Education of Mother and Toddler Mortality.

H_6: There is no significant difference in the proportion of children lost as one-to-four-year-olds by literate and illiterate mothers.

As predicted, the relationship between literacy and toddler mortality was not significant even at the 25% level.

Relationships between Age of Respondent and Toddler Mortality and Child Feeding.

H_7: There is no relationship between the ages of the respondents and the proportion of children lost as one-to-four-year olds.

The computed χ^2 of 28.2678 was not significant even at the 25% level. However, Table 25 shows that the very young and the very old lost more of their toddlers than did those in the ages 26-55.

TABLE 25

AGE OF RESPONDENT AND TODDLER MORTALITY

Age of Respondent in Years	Total Live Births	Number of Deaths of 1-4 year olds	Percentage of Total Live Births Lost as 1-4 year olds
16-25	46	11	23.91
26-35	179	26	14.53
36-45	182	27	14.84
46-55	68	7	10.29
56-65	37	8	21.62
66+	17	5	29.41

In contrast to toddler mortality, infant mortality tended to increase steadily with the age of the respondents, as shown in Table 26.

TABLE 26

AGE OF RESPONDENT AND INFANT MORTALITY

Age of Respondent in Years	Total Live Births	Number of Deaths of 0-1 year olds	Percentage of Total Live Births Lost as 0-1 year olds
16-25	46	4	8.70
26-35	179	15	6.15
36-45	182	17	9.34
46-55	68	9	13.24
56-65	37	5	13.51
66+	17	-	-

H_8: There is no relationship between the age of the respondent and whether she weans her child before, after, or at the same time the child learns to eat an adult diet.

This hypothesis was supported. The computed χ^2 was 4.3660 which was not significant even at the 25% level.

H_9: There is no relationship between the age of the respondent and the proportion of animal protein given to her children.

The computed χ^2 of 6.2561 was not significant at any of the three levels tested for. So, hypothesis nine is supported.

H_{10}: There is no relationship between the age of the respondent and the type of supplementary food given to infants.

This hypothesis was supported. The computed χ^2 of 2.9090 was not significant, even at the 25% level.

H_{11}: There is no relationship between the age of the respondent and the number of foods thought appropriate for babies.

The computed χ^2 of 17.3866 was not significant at any level tested, so this hypothesis was supported.

H_{12}: There is no relationship between the age of the respondent and the time at which she introduced her infant to stew.

This hypothesis is accepted because the χ^2 of 38.6592 was not significant at the 5% or 10% levels. However, it was significant at the 25% level. The Pearson product moment correlation showed a light tendency for older women to introduce stew later than younger women (r=.0234).

In summary, all of the hypotheses which stated that age is not related to toddler mortality and child feeding were upheld.

Differences in Child Feeding between Iwo and Ife Villages.

H_{13}: There are no significant differences between responses of Ife and Iwo women on the following variables: a) number of foods thought appropriate for babies; b) the age at which stew is introduced to children; c) the feeding of starch or a variety of supplementary foods; d) weaning before, after, or at the same time the child learns to eat an adult diet.

Table 27 shows the number of foods thought appropriate for babies by Iwo and Ife village mothers.

TABLE 27

NUMBER OF FOODS THOUGHT APPROPRIATE FOR BABIES IN TWO COMMUNITIES

Number of Foods	Iwo		Ife	
	Number	Percent	Number	Percent
0-5	8	10	18	20
6-10	19	23	19	21
11-15	22	26	25	28
16-20	9	11	17	19

More Ife than Iwo women felt that very few foods are appropriate for babies. Conversely, more Iwo than Ife women felt that many foods are suitable for babies. The differences in response for the two communities are significant at the 5%

level (χ^2 = 11.1929).

Table 28 shows the ages at which mothers in the two sets of villages introduced their babies to stew.

TABLE 28

AGE OF INTRODUCTION TO STEW IN TWO COMMUNITIES

Age of Child in Months	Ife		Iwo	
	Number	Percent	Number	Percent
0-6	31	39	22	30
7-12	37	46	25	35
13-18	12	15	17	23
19-24	-	-	5	7
25-30	-	-	1	1
31-36	-	-	2	3
37+	-	-	1	1
Totals	80	100	73	100

It is seen that all Ife women introduced stew no later than a year and a half, but several Iwo women waited for more than two years. The differences between responses of Ife and Iwo women were significant at the 5% level (χ^2 = 15.0387).

Ife women had a greater tendency than Iwo women to feed starch alone as the supplementary food. This is shown in Table 29.

TABLE 29

TYPES OF SUPPLEMENTARY FOOD IN TWO COMMUNITIES

Food	Ife		Iwo	
	Number	Percent	Number	Percent
Starch	57	66	39	57
Variety	29	34	30	43

However, the difference of response on this variable is very slight. The computed χ^2 was 1.7739 and was significant only

at the 25% level.

Table 30 shows that Ife women had a marked tendency to wean their babies after the introduction of a complete diet.

TABLE 30

TIME OF WEANING IN TWO COMMUNITIES

Time of Weaning Relative to Time of Introduction of Adult Diet	Ife		Iwo	
	Number	Percent	Number	Percent
Before	9	12	29	42
Same	13	17	25	36
After	54	71	15	22

The differences between the two groups on this question was significant at the 5% level ($\chi^2 = 36.7625$).

In summary, it has been shown that there are significant differences between the two communities on the following variables: number of foods thought appropriate for babies, the age at which stew is introduced, and time of weaning in relation to the time of introduction of an adult diet. The type of supplementary food given was not significantly different for the two communities.

Table 31 on the following page summarizes the testing of hypotheses. It may be seen that toddler mortality rates were significantly higher for mothers who fed infants only starch foods as supplements and for those who introduced stew at a later age. However, other variables concerned with child feeding were not significantly related to toddler mortality rates. Literacy and toddler mortality rates were not found to be related. The age of the respondent was not related to

TABLE 31

SUMMARY OF HYPOTHESES TESTING

Hypothesis #	Computed χ^2	Degrees of Freedom	Tabulated χ^2 5%	10%	25%	Conclusion 5%	10%	25%
1	3.5472	2	5.99	4.61	2.77	n.s.**	n.s.	s.***
2	3.6032	2	5.99	4.61	2.77	n.s.	n.s.	s.
3*	89.5491	1	3.84	2.71	1.32	s.	s.	s.
4	21.7349	20	31.41	28.41	23.83	n.s.	n.s.	n.s.
5*	96.3489	30	43.77	40.26	34.80	s.	s.	s.
6*	6.1655	5	11.07	9.24	6.63	n.s.	n.s.	n.s.
7*	28.2678	25	37.65	34.38	29.34	n.s.	n.s.	n.s.
8*	4.3660	10	18.31	15.99	12.55	n.s.	n.s.	n.s.
9*	6.2561	10	18.31	15.99	12.55	n.s.	n.s.	n.s.
10*	2.9090	5	11.07	9.24	6.63	n.s.	n.s.	n.s.
11*	17.3866	20	31.41	28.41	23.83	n.s.	n.s.	n.s.
12*	38.6592	30	43.77	40.26	34.80	n.s.	n.s.	s.
13a	11.1929	4	9.49	7.78	5.39	s.	s.	s.
13b	15.0387	6	12.59	10.64	7.74	s.	s.	s.
13c*	1.7739	1	3.84	2.71	1.32	n.s.	n.s.	s.
13d	36.7625	2	5.99	4.61	2.77	s.	s.	s.

* Hypotheses upheld

** Not significant

*** Significant

toddler mortality or to child feeding practices. Some differences in child feeding practices were found between the two groups of women.

DISCUSSION, IMPLICATIONS, CONCLUSIONS

Discussion and Implications

This study demonstrates the very high toddler mortality rates in the two communities studied and lends support to the work of other researchers who found toddler mortality to be related to nutritional factors. The total child mortality rate found in this study was slightly higher than for Osagere village (14), but much lower than for the Ilesha villages (8:154). In Nigeria it may be that mothers forgot some of the children who died or that they counted a child believed to be abiku as only one death. In either case, mortality would be higher than reported here. A future study of mortality should ask for total number of pregnancies. Even if the mortality rates are an underestimate, they point out that the ratio of deaths of one-to-four-year-olds to infant mortality is about four times as high as what Gordon says indicates poor nutritional status of a community (17:362).

As discussed above, the relationship between toddler mortality and time of introduction of an adult diet relative to time of weaning was not as expected. Those who weaned babies at the same time they introduced adult foods lost the highest proportion of their toddlers. It may be that the sudden loss of milk protein coupled with the increased consumption of red pepper and the increased exposure to diarrhea

and infection contributed to the higher mortality. Likewise, the higher rate of toddler mortality for those who weaned after the introduction of a complete diet might be related to the type of food given plus hygienic factors. While the probability that the relationship tested in hypothesis one was due to chance is 25%, still, the relationship does bear consideration. It may be that early introduction of the wrong foods is harmful, and that one should not advise early introduction of food without specifying what foods.

It was thought that distribution of animal protein would reflect the respondents' attitudes towards the importance of animal protein for children, and as such would be related to toddler mortality. With the outcome of hypothesis two, it is now realized that too many other factors besides attitude affect meat distribution and that one cannot hope to relate a single, recent event to the loss of children which may have occurred twenty years ago. However, when toddler mortality rates were compared for those who served animal protein in the household and those who had not served any, it was seen that those who had not served any had lost more of their children as one-to-four-year-olds (20% as compared to 14%). Meat consumption may be a reflection of general economic factors which may be related to toddler mortality.

Only a very simple categorization of supplementary foods was made, the idea being that infants fed a variety of foods would have higher protein intakes than those limited

to corn pap and yams. Toddler mortality rates may reflect differences in protein intakes. The foods asked for were those given in addition to breast milk before the introduction of an adult diet. Those getting a variety of foods may have been given soft foods containing tolerable amounts of pepper and therefore not precipitating a crisis as early introduction of adult foods may have done.

The lack of relationship between the number of foods thought appropriate for babies and toddler mortality rates was probably due to two things. Almost no one felt that animal protein foods were appropriate for babies and even those foods thought appropriate were not often given as supplementation.

The earlier a baby starts to dip into stew, the sooner he is introduced to the main source of animal protein. This may explain the relationship between early introduction to stew and lower toddler mortality rates.

The age of the mother was not an important variable. It was seen that those in the age groups 16-25 and 56+ lost more of their toddlers than women ages 26-55. Most of the women in the high and low age groups were from the Iwo villages. It is not clear whether the age distribution may have been responsible for differences in mortality rates between Iwo and Ife or whether different child care practices in Iwo were responsible for higher toddler mortality for Iwo (older and younger) women.

Since for the total sample, there was no consistent relationship between age of respondent and child feeding practices, one can say that child feeding in the two areas studied has not changed significantly in the last forty years. This is probably related to the low levels of mass media exposure and the fact that women learned to care for their children from their elders, or as some said, from God.

The fact that infant mortality rates were lower for younger women may be a result of increased use of hospitals and maternity clinics for deliveries. Since the proportion of infant deaths has been decreasing, but the proportion of toddler deaths has not decreased, a young woman is more likely than her mother was to have a baby that lived through infancy only to die in early childhood. This demonstrates the urgent need for more programs aimed at young children.

Implications for Nutrition Education Programs

Because of the importance of children in Yoruba culture and because of the widespread interest in learning new child feeding practices, one would expect mothers to be receptive to a well planned program. The child feeding practices that this study revealed would have importance in planning a nutrition education program.

It appears that there is no danger that breast feeding is declining in the two communities studied. However, due to the poor sanitation of feeding bottles usually found among poorer classes of less developed countries (21), the use of feeding bottles should be discouraged, even if feeding

bottles are not used to replace the breast. Since the main reason for use of a bottle was to avoid forced feeding, another alternative such as the use of spoons and cups might be recommended.

The feeding of native medicine is an important feature of infant care in both communities. These medicines are made from quinine leaves and as such probably help prevent malaria. However, more needs to be known about the other ingredients used and what physiological effects they have, particularly in regard to the babies' digestive processes. The possibility of adding protein supplements to these tonics should also be investigated.

Morley recommended that supplementary feeding should begin by six months at the latest (31:85). However, forty percent of our sample began supplementary feeding later than this, suggesting the need for teaching earlier as well as more appropriate supplementation.

It has been indicated that early introduction of a complete diet may be harmful, so there is a need to develop special foods for babies. The question on attitudes towards foods for babies points out that the main objections to protein rich foods were the idea that babies do not need them and the fact that such foods are hard. Other foods were thought unsuitable because of pepper. Mothers could be taught to remove a small portion of the stew they are preparing before adding pepper. They could add small amounts of ground and prepared meat, fish, peanuts, melon seeds,

locust seeds or crayfish. This high protein sauce could be fed to children along with soft vegetables such as okra and any carbohydrate rich food the mother thinks suitable. There are many other dishes, and especially bean dishes which a mother could prepare easily for infants, just by altering a small part of the food she is preparing for the family. Mothers might also be encouraged to give their babies more fruit.

It is hoped that in time, and with the provision of alternatives, the practice of feeding corn pap may almost disappear. Before that happens, though, supplementing the pap with eggs, using only fermented ogi, and feeding a thicker, less watery pap would improve the calorie, protein and vitamin content.

Since bread was the snack most frequently given to children during the weaning period, it could be made more nutritious by spreading peanut butter on it. Groundnut or cocoa flour could be added before baking. A high protein bread available at the same price as regular bread and advertised as a special weaning food would probably sell very well.

The qualitative study of dietary intakes points to some probable nutritional deficiencies among older children and adults. Certainly, children do not receive enough animal protein as evidenced by the distribution of meat within the family. Secondly, the large number of households which did not consume any animal protein points to both a lack of understanding of the importance of animal foods and

the need to teach budgeting so that money will be available for meat. Although vegetables were consumed often, a pot of vegetables could be cooked for lunch on one day, and then reheated and served at every meal until supper on the following day. In this way, even vegetables fresh from the farm lose most of their vitamin value. It is not expected that education on the proper handling of vegetables will have much impact, since too great an expenditure of time would be required. However, an increased consumption of fresh fruits would go a long way towards improving vitamin intakes.

Convincing mothers that their children need special foods will probably be much harder than teaching them how to prepare the foods. However, this study pointed out that most of the women are very eager to learn new child care practices. The amount of respect given to "authorities" such as medical personnel is also encouraging. The survey showed a slight tendency to emulate "educated" people, and other people in the community, providing that what these people do is not too incompatible with traditional ways. An educational program might do well to emphasize the value of traditional Yoruba foods and the idea that modern people prepare special foods for babies.

When it was seen that literacy is not related to toddler mortality, a small analysis was done of child feeding practices by level of education. Feeding practices did not vary according to years of shooling. Many girls are forced to quit school after one or two years, sometimes before they

are literate. If one were to teach child care to school girls, it should be in the first two years of primary school.

Because this study has pointed out that few women are literate and few have access to radio programs, an interpersonal rather than mass media approach to change would be more effective.

The amount of extra time and energy needed to prepare special baby foods may be prohibitive for many of the working mothers, especially those who trade and spend much of their time away from home. For this reason, it might be desirable that special teaching emphasis be given to food vendors. Vendors could prepare part of their recipes especially for babies, or some vendors might even find it profitable to specialize in baby foods in an area that is educated as to the importance of the foods. Vendors, especially those who hawk, are in an excellent position to advertise and popularize locally made baby foods. Furthermore, the progress of the program could easily be assessed through sales of the foods.

There were significant differences in child feeding practices between the two communities. These differences would not affect what one would teach in a nutrition program, but they would influence teaching methods and standards for evaluating the program. For example, one would want to teach both Iwo and Ife mothers that all the foods listed in Section E of the questionnaire are good for babies. But in the Ife villages, where fewer of the foods were thought appropriate, more time would have to be spent on this aspect of the program than in the Iwo villages. Because of the

differences cited, one could not generalize the findings of this study to other Yoruba communities.

This study suggests that the most important data needed for planning an applied child nutrition program are those relevant to the type of supplementary food used and the age of introduction to stew because of their relationships to toddler mortality. In addition, one would want to find out what foods are thought acceptable for babies and the prevalent beliefs about unacceptable foods. Information as to the occupations of women, their reliance on food vendors, and their exposure to outside sources of information would also be useful in planning details of the program.

Conclusions

This study does not imply that malnutrition is the only or even the most important problem facing Yoruba children. The importance of infectious diseases, genetic disabilities, and economic factors is also recognized. However, it may be concluded that mothers who introduce babies to stew at an early age lose fewer toddlers than those who give stew later. Likewise, fewer toddlers were lost by mothers who fed a variety of supplementary foods than by those who fed only starchy supplements.

Age and education of the women were not found to be related to toddler mortality rates or child feeding practices.

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APPENDIX

A STUDY OF CHILD CARE AND NUTRITION AMONG YORUBA WOMEN

IN RURAL AREAS AROUND IWO N IFE

oOo

_____ _____ ni oruko mi. Ile-Iwe giga Yunifasiti ni mo ngbe. Mo fe ko eko nipa itoju omo-owo ati nipa onje ti omo-owo nje lati odo nyin. Inu mi yio dun ti e ba le se alaye lekun rere fun mi lori awon eko ti mo fe ko na.

Gbogbo ohun ti e ba so fun mi loni ko si eti keta to ma gbo.

----------oOo----------

(My name is _____. I live at the University of Ife. I am interested in learning some things about child care and nutrition from you. I shall be grateful if you answer my questions fully.

Everything you discuss with me shall be treated confidentially.)

----------oOo----------

_____ _____

Name of Interviewer Name of Village

Interviewer's comments.....

.....

....

.....

....

....

.....

.....;..... ....

....

Section A. Background Information

1. E jowo, kini oruko nyin?
   (What is your name?) _____

2. Oruko oko nyin ti nje?
   (what is your husband's name?)_____

3. Nje enyin ni iyale oko nyin?
   (Are you your husband's senior wife?)_____

4. Bi beko, iyawo kelo ni nyin?
   (which of his wives are you?) _____

5. E jowo, iyawo melo ni oko nyin ni?
   (Please, how many wives has your husband?)_____ _____

6. E jowo, omo odun melo ni ero wipe e to bayi?
   (How old do you think you are now?)

   16-25 _____

   26-35 _____

   36-45 _____

   46-55 _____

   56-65 _____

   66 up _____

   (If respondent doesn't know her age, refer to calender of local history.)

7. E jowo, omo ilu wo ni nyin?
   (What is your home town?) _____

8. Nje e ti gbe ilu miran ri?
   (Have you ever lived in other places?) _____

9. (If yes) Awon ilu wo ni e ti gbe ri?
   (what towns have you lived in?)

Ilu ti e gbe (Place lived in)	Bawo ni e ti pe to nibe? (Length of time in the place)
_____	_____
_____	_____
_____	_____
_____	_____

10. Nje e lo si ile-iwe ri?
(Have you ever gone to school?) _____

11. Odun melo ne i se ni ile-iwe?
(How many years did you spend in school?) _____

12. E jowo, iwe melo ne e ka nigbana?
(What was the highest class you finished?) _____

13. E jowo, ede melo ne e le so?
(How many languages can you speak?) _____

14. Nje e ma iwe ka tabi ko ni ede:
(Can you read or write:

	Ka (read)	Ko (write)	Se (speak)
Oyinbo (English)			
Yoruba			
Omiran (other)			

15. Iru ise wo ne e nse?
(What work do you do?) _____

16. Se owo nwole daradara lati ibi ise yi?
(Do you get plenty of money from this work?)_____

17. Ti e ba fe gbo bukata kan (bi aso rira tabi inawo kan) se owo owo nyin ma nto tabi bawo ni e se ma nri owo kun?
(If you want to do something (buy clothes or celebrate a festival) how else will you find money?)

_____

_____

18. Bawo ni e se bere okowo nyin? Bale nyin lo da nyin lokow ni tabi awon ebi nyin?
(How did you raise the capital to start this work?)

_____

19. Ise wo ni bale nyin se?
(what work does your husband do?) _____

20. Se ibi ise yi ni o ti nri owo gbo gbogbo bukata re tabi ona miran (bi oko tabi ile) wa fun u?
(Does he get plenty of money from this work?)

_____

21. Bawo ni o se nse ti o fi ngbo gbogbo bukata re?
(If not, How does he manage?) _____

22. Se bale nyin ni o nfun nyin ni owo ti e fi ndana onje tabi apo ara nyin ni e ti nmu?
(Who supplies the money for food?) _____

Section B. Sources of Information

1. Nje e ni ero gbohungbohun?
(Have you a radio?) _____

2. Iru ere wo ni e ma ngbo ju?
Iru oro ori redio wo ni o ma wu nyin lati gbo ju, ti e si ma ngbo?
(which programs do you listen to most?)

Music _____

Yoruba tales and riddles _____

Yoruba _____

Plays _____

News _____

Educational Programs:

For school children _____

Health programs _____

Food preparation and habits _____

Agricultural programs _____

3. Nje e ti ri cinema ri?
(Have you ever seen cinema?) _____

4. Bi beni, se ni ile yi ne e ti ri?
(If yes, was it in this town?) _____

5. Nje enikeni ti wa ba nyin sero lori fifun omode ni onje ati lori itoju awon omode?
(Have people come here to speak of feeding of children and child care?)

_____ - _____

6. Bi beni, awon tani?
(If yes, who were they?) _____

Section C. History of Children

E j'owo ma wa bere awon die nipa awon ore nyin ati itoju won.
(If you don't mind, I want to ask a few questions about your children and their care.)

1. E j'owo awon omo melo ni e bi to nwon wa laiye bayi?
(How many of your children are alive now?) _____

2. Kini ojo ori nwon?
(What are their ages?) If she doesn't know, refer to calendar of local History.

3. Okunrin tabi obirin ni omo odun _____?
(Is the ___ year old a boy or a girl?) Ask for each one.

4. Se odo nyin ni gbogbo won ngbe?
(Do they all live with you?)

Bi beko, nibo ni won ngbe? Lodo tani?
(If not, where do they live? W th whom?)

5. Kini ise ti won nse?
(What is their work?)

AGE	SEX	RESIDENCE	OCCUPATION
_____	____	_____	_____
_____	____	_____	_____
_____	____	_____	_____
_____	____	_____	_____
_____	____	_____	_____
_____	____	_____	_____

6. E j'owe, awon ome nyin melo ni o salaisi?
(How many of your children have died?) _____

7. Omo odun melo ni nwon to nigbati nwon ku?
(How old were they when they died?)

8. Nje omokunrin tabi omobirin ni eyiti o salaisi ni omo odun _____?
(was the ___ year old who died a boy or a girl?) Ask for each one.

9. Kini o see ko o to ku?
(What caused the child to die?)

10. If fever mentioned: Iru igbona wo ni?
(What type of fever?)

11. Ile ni o ku si tabi ile-egun tabi lodo onisegun?
(Where did the child die? Home, hospital etc.?)

AGE	SEX	CAUSE OF DEATH	PLACE OF DEATH

12. E j'owe, nje e bi okume ri?
(Have you ever had a still birth?) _____

13. (If yes) Ni e melo?
(How many times.)_____

14. Nje oyun baje lara nyin ri?
(Have you ever had a miscarriage?) _____

15. (If yes) Ni e melo?
(How many times?)_____

16. Se e loyun bayi?
(Are you pregnant now?)_____

17. Omo melo ni e fe bi sii?
(How many more children do you want.) _____

18. Ti e ba je wipe e ba mo pe gbogbo omo ti e ba bi ni Olorun yio da si, eme melo ni iba wu nyin lati bi?
(If you could be sure that all your children would survive, how many children would you want?)_____

20. Nje enia le bimo tio poju lati toju dada? Kini idi re?
(Is it possible for someone to have more children than he can care for? Why or why not?)

_____

_____

21. Nje eniti omo ba nmu emu laiya re lowo le loyun? Kini idi re?
(Is it possible for someone who is nursing to conceive another baby? Why or why not?)

_____

_____

22. Ti eniti o nfun omo lemu lowo ba loyun kini yio sele?
(If someone who is nursing should conceive another baby, what would happen?)

_____

_____

Section D. Child Care

1. Nje omo nmu omu laiya nyin nisisiyi?
   (Are you nursing a baby now?) _____
   Interviewer should use discretion here

2. Nje o le fidin botu (feeding bottle) fun omo nyin ri?
   (Did you ever use feeding bottles for your baby?)

   _____

3. Kini o po sinu re?
   (What did you put in it?)_____ _____

4. Kini idi re ti o fi le fidin botu na?
   (Why did you use a feeding bottle?)_____

   _____

5. Omo nyin ti o kere ju to omo odun melo ke o to gba omu lenu re?
   (How old was your youngest child when you weaned him.) _____

6. Ogbon wo ne o lo lati gba omu lenu re?
   (What method did you use to wean him?) _____

   _____ _____

7. Nigbati o gba omu lenu omo na nje o mu lo si odo enikan lati ma gbe ibe?
   Bi beni, tani eluware?
   (When you weaned the child, did you send him to live with someone else?
   If so, who was it?) _____

8. Bwo le dara ju ninu ki a fun omo lomu ati ki a fun ni fidin botu?
   (Is it better to breast feed or bottle feed a baby?) _____

   Kini idi re?
   (Why?) _____ _____

   _____

9. Omo nyin ti o kere ju to omo osu melo ki o to ma fun ni ohun ti ki ise omu?
   (How old was your youngest child when you started to feed him something
   other than breast?)__ _____

10. Iru kini awon ohun ti o nfunu wonyi?
    (What types of things did you give him?)_____

    _____

11. Iru onje wo ni omo na je lati igbati o bi titi o fi bere si je onje ti
    enyin na njo?
    (What types of foods did you give the baby from the time he was born
    to the time he could eat the same foods as yourself?)

    _____

12. Omo na to emo esu melo ki e to bere si fi ebe si lenu?
(How old was your last child before you let him taste your stew?)

_____

13. Bawo ni e ti pe to ki to to gbadun re?
(How long did it take before he liked it?)_____

14. Nje e ma nje eran si emo na lenu? Bawo ni e ti dagba to nigbati e bere si je eran si lenu?
(Did you ever chew meat for the baby? How old was he when you started to give him chewed meat?) _____

Nje e gbadun re?
(Did he like it?) _____

15. E melo ni e ma nfun emo na ni onje lojumo?
(How often do you feed your child?)

Nigbati e ba njeun ni?
(When you eat) _____

Nigbakugba ti ebi ba npa a?
(When he is hungry?)_____

Tabi bawo?
(Other)_____ _____

16. Nje e mo ohun ti a npe ni Amama?
(Do you know what Amama is?) _____

Nje e le ri?
(Did you ever use it?) _____

Se e dara nigbati e le?
(Was it good?) _____

17. Omo nyin kekere to omo odun melo ki o to le je onje ti agbalagba yio je?
(How old was your youngest child when he was able to eat the foods of an adult?) _____ _____

18. Tani o ko nyin bi e e tise mameteju awon emo nyin?
(Who taught you how to care for your children?) _____

19. Iru onje wo ni awon ti o je agbalagba iwaju nyin ma nfun eyede ti o ba ti bo lenu omu?
(What types of foods did your ancestors used to give weaned babies?)

_____

_____

_____

20. Se e fe ke ona miran ti a fi le fun omo ni enje?
(would you like to learn new ways of feeding your children?)

---

21. Nje ara awon omo nyin da tabi nwon mo nse aisan nigbagbogbo?
(Are your children healthy or sickly?)

Healthy _____

Sickly _____

22. Nje okan ninu awon omo nyin ti ni aisan wonyi ri?
(Has any of your children ever had: read list)

Aisan Sickness	Beni Yes	Beko No	Iru enje we Type of food
Igbe- erin (Diarrhoea)			
Aran inu (worms)			
Owuke (Cough)			
Otutu, efinkin, osin (Common cold)			
Iba (Fever)			
Olode tabi ilegbona (Smallpox)			
Eyi (Measles)			
Inu wiwu (Pot belly)			
Ailee jeun (Lack of appetite)			

Aisan Sickness	Beni Yes	Beko No	Iru onje wo Type of food
Ki ome ma sere (Dullness)			
Orifife tabi tuulu (Headache)			

23. Nigbati nwon ba nse aisan wonyi, iru onje wo ni e nfun won?
(When they have these sicknesses, what do you feed them?)

24. Bawo ni e se toju nwon?
(How do you care for sick children) Check:

1. Ninu hosibitu (Hospital) _____
2. Lodo dokita (Medical Docter) _____
3. Ninu ile ogun kekere (dispensary) _____
4. Lodo awon onisegun (herbalist) _____
5. Lodo babalawo (magician) _____
6. Lodo awon obi nwon agba? (older relatives) _____
7. Tabi e ni ogun ti ara nyin? (your own medicines) _____
8. Tabi e ra ogun oyinbo (Patent medicines) _____
9. Tabi e mangbadura fun nwon ni (Prayer/Aladura) _____

Section B: Opinion on Foods

1. Nje _____ dara fun?
Bi ko ba dara, kini idi re.

Mark X if good.
If not good, write reason.

(Is _____ good for:
If it is not good, why?)

	Ome ewe A small baby	Omode to ko mu oyan ma A weaned child	Iya ti e nfun omo l'omu Nursing mother	Eniti e loyun Pregnant woman
Eran meat				
Eja fish				

	Ome ewe A small baby	Omede ti ke mu eyan ma A weaned child	Iya ti o nfun ome l'omu Nursing mother	Eniti e leyun Pregnant woman
Adie chicken				
Eyin eggs				
Igbin snails				
Obe egusi melon seed soup				
Rebe melon cake				
Miliki, Wara milk				
Wara Fulani cottage cheese				
Iru locust seeds				
Ewa beans				
Moin moin bean pudding				
Akara bean cakes				
Epa peanuts				
Orombe oranges				
Ogede wewe bananas				
Ibepe paw paw				
Gurefa guava				

	Ome ewe A small baby	Omode ti ke mu oyan ma A weaned child	Iya ti e nfun ome l'emu Nursing mother	Eniti e loyun Pregnant woman
Efe leafy vegetables				
Ila okra				
Ata pepper				
Ede cray fish				

Section F. Feed Consumption

1. E jowo, kini ohun ti e je ati ohun ti e mu .*... ana?
(What did you eat or drink yesterday ..*.. ?)
* laro (morning)
* losan (afternoon)
* lale (evening)
* ati fun ipanu (for snacks)

Record on chart. Mark /

2. Ekiri eran melo ni e fi jee?
(How many pieces of meat did you eat with your feed at each meal?)

laro	_____	(morning)
Losan	_____	(Afternoon)
lale	_____	(evening)
ati fun ipanu	_____	(For snacks)

3. Se ojojumo ni e nse eleyi?
(Is this a typical day's diet?) _____

Bi beko, iru awon onje we ni e ma nje ...*..... ?
(If not, what would you normally take in the ..*..?
* laro (morning)
* losan (afternoon)
* lale (evening)
* ati fun ipanu (for snacks)

Record on chart. Mark X

4.-6. Repeat for respondent's husband.

7.-9. Repeat for adult relatives.

10.-12. Repeat for children

13.-15. Repeat for babies.

16. For every food mentioned, ask:

K ra lowo eniti o nta ni tabi enyin le se (su, din, ro) ninu ile?
(Did you buy the food from a vender, or prepare it at home?)

Mark / under vender on chart.

17. For those foods cooked at home from several ingredients, ask:

Awon eroja wo ni o wa ninu _____ ti e so wipe e je lana?
(what ingredients were in the ____ which you said you ate yesterday?

Fill in name of food on ingredients chart and mark / in column.

18. For each food of only one ingredient and for each ingredient of foods prepared at home, ask:
Se ni eko le ti mu tabi e ra a tabi nwon fun nyin?
(was the product from the farm, bought, or a gift?)

Mark /

FOOD CHART FOR SECTION F	1 WIFE				4 HUSBAND				7 RELATIVES				10 CHILDREN				13 PARENTS				16 SOURCE			
	Morning	Afternoon	Evening	Snacks	Morning	Afternoon	Evening	Snacks	Morning	Afternoon	Evening	Snacks	Morning	Afternoon	Evening	Snacks	Morning	Afternoon	Evening	Snacks	Vendor	Farm	Bought	Gift
Ẹ̀wà (beans)																								
Ẹ̀pọ̀n ẹ̀pọ̀n (bean pudding)																								
Àkàrà (bean cakes)																								
Ẹ̀gúsí (melon seed pudding)																								
Ṣẹ̀kẹ̀sín (melon seed cakes)																								
Robo (melon seed press cakes)																								
Ẹ̀pà (ground nuts)																								
Ìrẹ̀sí (rice)																								
Jollof rice																								
Ìrẹ̀sí àti ẹ̀wà (rice and beans)																								
Ọ̀bẹ̀ efọ (vegetable stew)																								
Ọ̀bẹ̀ ilá (Okra soup)																								
Ọ̀bẹ̀ ẹran (meat stew)																								
Ọ̀bẹ̀ adie (chicken stew)																								
Ọ̀bẹ̀ eja (fish stew)																								
Ọ̀bẹ̀ igbin (Snail Stew)																								
Obe ata (pepper soup)																								
other soup or stew)																								
Suya (barbecued meat)																								
Eja dindin (Fried fish)																								
Ẹ̀gbin (eggs)																								

FOOD CHART FOR SECTION F	1 WIFE				4 HUSBAND				7 RELATIVES				10 CHILDREN				13 BABIES				16 SOURCE			
	Morning	Afternoon	Evening	Snacks	Morning	Afternoon	Evening	Snacks	Morning	Afternoon	Evening	Snacks	Morning	Afternoon	Evening	Snacks	Morning	Afternoon	Evening	Snacks	Vendor	Farm	Bought	Gift
Isu (yams)																								
Iyan (pounded yam)																								
Asaro (pottage)																								
Dundu (fried yam)																								
Ọjọjọ (grated yam cakes)																								
Amala (yam flour)																								
Agbagba (plantain)																								
Dodo (fried plantain)																								
Bọli (roasted plantain)																								
Ikọ (corn starch)																								
Tuo (corn meal mush)																								
Kasa (hush puppies)																								
Adum (corn meal pudding)																								
Lafun (fermented cassava flour)																								
Gari (grated roasted cassava)																								
Ẹba (" " " , wet)																								
Koko (cocoa yam)																								
Anana (sweet potato)																								
Elegede (pumpkin)																								
Buredi (bread)																								

FOOD CHART FOR SECTION F	1 WIFE				4 HUSBAND				7 RELATIVES				10 CHILDREN				13 BABIES				16 SOURCE			
	Morning	Afternoon	Evening	Snacks	Morning	Afternoon	Evening	Snacks	Morning	Afternoon	Evening	Snacks	Morning	Afternoon	Evening	Snacks	Morning	Afternoon	Evening	Snacks	Vendor	Farm	Bought	Gift
Wara tabi miliki (milk)																								
Lactogen etc.																								
Wara Fulani (cottage cheese)																								
Bournvita																								
Milo																								
Tea or coffee ASK FOR BRAND:																								
Soft drinks																								
Emu (palm wine)																								
Oguro (raffia wine)																								
Ofika (guinea corn wine)																								
Pito																								
Oti bia (beer)																								
Oti stotu (stout)																								
Bolugi (gin)																								
FRUITS: PLEASE LIST AS MENTIONED BY THE WIFE:																								
Other foods																								

INGREDIENTS	14 NAME OF FOODS EATEN											15 SOURCE		
												Farm	Bought	Gift
Ata (pepper)														
Alubosa (Onion)														
Timati Tomatoes)														
Timati elagolo (tinned tomatoes)														
Epo (palm oil)														
Ororo (Other oils														
Iru (locust seeds)														
Edo (cray fish														
Epa (pea nuts)														
Egusi (melon seed)														
Ewa (beans)														
Iresi (rice)														
Agbado (maize)														
Isu (yam)														
Gari (cassava)														
Efo (vegetable)														
Ila (Okro)														
Eja gbigbe (dried fish)														
Eran (meat)														
Adie (chicken)														
Eja (fish)														
Igbin (snails)														