CHILDCARE PRACTICES AND NUTRITIONAL STATUS OF 0-2 YEAR OLD CHILDREN IN LOWER NYAKACH, KISUMU DISTRICT

By

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

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DEDICATION

This work is dedicated to my mother, Calsina Rebba Omoto and my late uncle Bernard Andrew Musimbi for their dedication and endless support towards my education.

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DEFINITIONS:

A DAY: For the purpose of this study, a day refers to the total observation period for each household which was 9 hours. These consisted of 90-minutes observation units distributed between 7.00 a.m. and 6.30 p.m. on six randomly selected days to make the total of 9 hours.

CAREGIVER: This refers to any person who was involved in taking care of the child.

ALTERNATIVE CAREGIVER: Also known as mother- substitute, refers to any caregiver, other than the mother, who was involved in taking care of the child, for instance, sister/brother, cousin, aunt, father or grandparent.

PRIMARY ALTERNATIVE CAREGIVER referred to the major caregiver apart from the mother.

CHILDCARE refers to the routine care of the child. It involves all kinds of caregiving activities, performed specifically for the child, by the mother or other caregivers in the home.

CARE OF CHILD'S BODY: This refers to washing the child, changing napkins for child, dressing the child, trimming the child's hair and nails and giving the child medicine.

CAREGIVER RESTING/RELAXING refers to the time when the mother or mother substitute is not busy doing any activity.

COMPLETED ACTIVITIES: These refer to childcare activities which were observed and timed from the beginning to the end, for example, caregiver started cooking for child while being observed and completed the activity while still under observation.

INCOMPLETE ACTIVITIES: These are the childcare activities that were either in progress at the beginning of the observation, or were still going on when the observation time ended.

CLEAN CHILD: This referred to the child who was observed to be clean in three or more of the following aspects: clean clothes, clean nose, clean face, clean body and clean playing environment. No grading of cleanliness was made here.

COMFORTING CHILD: This referred to activities such as carrying or holding the child, comforting the child while crying or to send him to sleep.

HOLDING THE CHILD: This was only timed when the mother or alternative caregiver held the child on her lap or hands.

The time when the mother was holding the child and breastfeeding, feeding or washing was not timed as holding the child.

HOUSEHOLD: This was defined as people who live together under one roof and eat from the same pot.

MATERNAL ACTIVITIES: This referred to any activity performed by the mother, both within and outside the home.

OBSERVATION UNIT: This consisted of 90 minutes per household. In this study, each household received six observation units.

SICKNESS: For the purpose of this study, sickness meant that the child was unwell and confined to bed at home or in hospital and the mother or other caregivers had to spend unusually more time in the compensatory care of the child.

Z-SCORES: This referred to the standard deviation scores, which, relate the relative position of each child's weight and height value to the distribution of weight and height values of the NCHS/WHO reference population (Quinn, 1992).
WEANING refers to the introduction of other foods including drinks other than breast milk to the child.

ABBREVIATIONS:

A.I.C - African Inland Church

CBS - Central Bureau of Statistics

CDC - Centre for Disease Control

C.P.K. - Church of Province of Kenya

CRSP - Collaborative Research Support Program

IDRC - International Development Research Centre

NCHS - National Centre for Health Statistics

NCPD - National Council for Population and Development

SDA - Seventh Day Adventist

UN - United Nations

UNICEF - United Nations International Children's Emergency Fund

USAID - United States Agency for International Development

WHO - World Health Organization

<5S - The under five year old children

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ABSTRACT

This study aimed at determining the various childcare activities performed by caregivers, time allocation for childcare activities and nutritional status of children aged 0-2 years.

A descriptive cross-sectional study was carried out between October 1992 and early January 1993. The methodologies used in data collection were focus group discussion, interview, participant observation and anthropometric measurements. The sampling frame was made up of households with children aged 0-24 months, and sampling was through multistage sampling technique.

The findings of this study show that important childcare activities according to maternal rating of activities were *cooking for the child* (46%), *care of child's clothes* (29%), *care of child's body* (14%) and *feeding the child* (7%).

The activities that were reported to be taking much of the mothers' time were *care of child's clothes* (reported by 90%), *cooking for the child* (reported by 43%) and *feeding the child* (reported by 17%). However, observation results indicate that *comforting the child* (76 minutes per day) and *breastfeeding* (53 minutes per day) were the two most time consuming childcare activities. These two activities were,

however, not rated high among important childcare activities by the mothers.

When mothers do not have enough time for all the childcare activities, they use various methods in different activities to save time. In looking for food, most mothers (63%) reported *stocking enough food* in the house as a way of saving time, while the majority (77%) save time in fetching fuel by *fetching a lot* to be used once in a week. The use of a wheelbarrow or donkey was reported by the majority (39%), as a way of saving time in fetching water. Some of the reported time-saving methods, for example, *cooking food for more than one meal*, could however be harmful for the child's health and nutrition, noting that in a rural community, facilities such as refrigeration are not available for food storage.

High prevalence of malnutrition was noted in the study area where stunting (27%) was the common form of malnutrition at all ages, especially among the male (38.9%) children. There was a weak correlation between the child's nutritional status and the mean time for childcare activities which was not statistically significant ($p<.05$), hence the study concluded that nutritional status of a child does not depend only on the care given to the child by the caregivers, but on other factors.

CHAPTER 1

INTRODUCTION

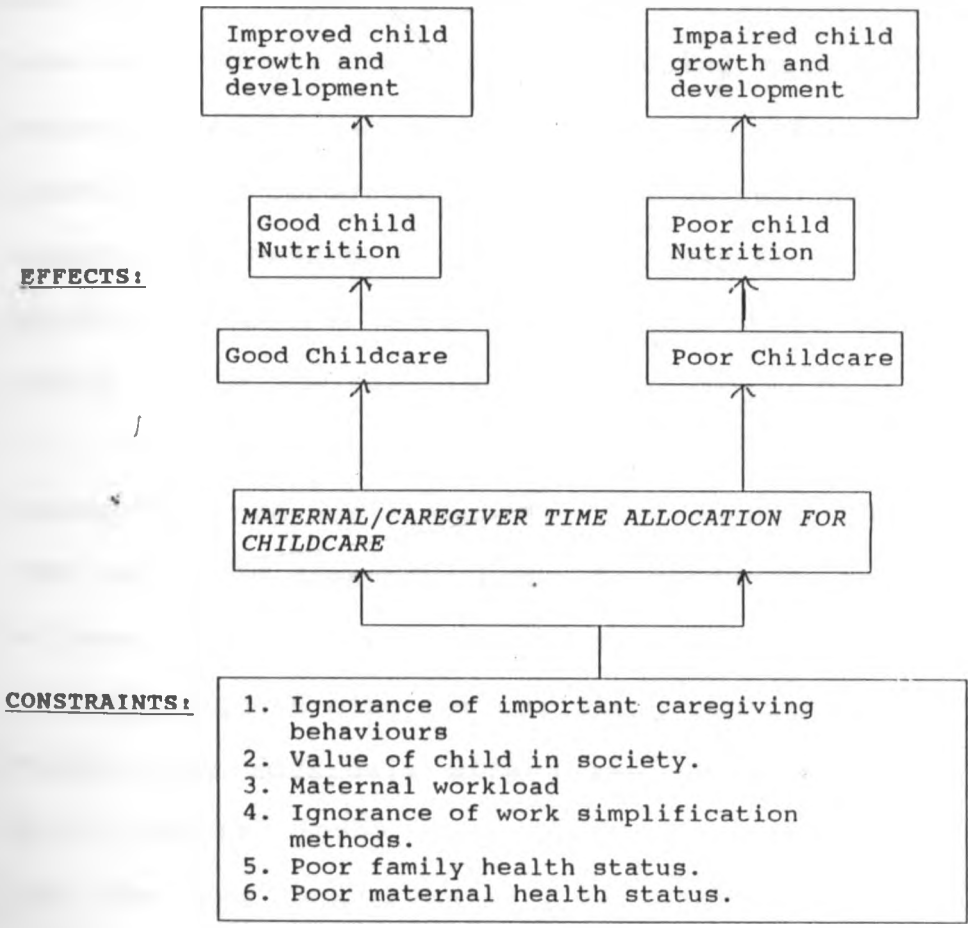
1.1 PROBLEM IDENTIFICATION

The years of babyhood, two weeks after birth to two years, comprise the period that form the true foundation of life (Hurlock, 1968). During this time, the demand for time for childcare is usually high. It is however noted that care is one of the three conditions necessary for child survival and development, the other two being food and health, (UNICEF, 1990). It has also been noted that poor growth which occurs during this critical period is largely responsible for the low weight and stunted growth of older children throughout Kenya (UNICEF, 1989). The availability of time for childcare is, however, one of the six constraints to childcare. The other five constraints are: maternal physical health, mother's mental health and self confidence, education and beliefs of mother and family, social support, workload of the mother and the availability and control of resources (UNICEF, 1992). It is obvious that the six constraints are interrelated, for example, the maternal workload will influence the availability of time for childcare. These can be portrayed by the conceptual framework in figure 1.1.

1.2 THE CONCEPTUAL FRAMEWORK

The conceptual framework in figure 1.1 shows some of the constraints that surround maternal time allocation for child care and the effect of such constraints on maternal/caretaker time allocation for childcare and hence child's health and nutrition.

FIGURE 1.1: CONSTRAINTS AND EFFECTS OF MATERNAL/CARETAKER CHILDCARE TIME ALLOCATION ON CHILD NUTRITION AND DEVELOPMENT



1.3 JUSTIFICATION OF RESEARCH PROBLEM

Although poverty has been reported as the most important cause of undernutrition, research has shown that even among the economically disadvantaged families, some children thrive and prosper despite the resource limitation (Zeitlin, et al., 1990).

It is also noted that integrated nutrition projects which are based on community participation and decision making have been more successful in reducing malnutrition. Such projects require a greater awareness of socio-cultural practices and caregiving behaviours as well as other intra-household processes. Other studies have shown that maternal education explains more variance in child survival than family income (UNICEF, 1992).

Researchers and assistance agencies such as UNICEF, USAID, IDRC and World Bank have begun to recognise the importance of care for children and women in nutrition and health. Lack of adequate care for children, especially at age 0-24 months, may adversely affect the rate of growth of the child (UNICEF, 1990). This age is very important since it lays the true foundation of life (Hurlock, 1968).

It may not be easy to determine the total time spent in childcare since it tends to be concurrent with other

activities and also, many aspects of child care such as teaching, conversing, or holding a child, may be considered leisure, not child care to mothers (UNICEF, 1992). However, the distribution of time among the activities that mothers consider to be caregiving behaviours can be determined.

1.4 PURPOSE OF THE STUDY

The purpose of the study was to generate information that would contribute towards improving the child's nutritional status through maternal and alternative caretaker awareness of important caregiving behaviours and proper time allocation for child care.

The above information will be useful to policy makers and programme developers in developing and implementing programmes that would enable mothers to distribute and manage their time well for the wellbeing of their children. Such information would also make it possible to promote time-saving methods or devices that would specifically assist mothers in various childcare activities in the home.

1.5 MAIN OBJECTIVE

The main objective of the study was to determine the childcare activities performed by caregivers in a rural community, the time allocation for childcare and nutritional status of 0-2 year old children.

1.6 SPECIFIC OBJECTIVES

1.6.1 To identify and describe all activities performed by mothers of children aged 0-2 years in the study population.

1.6.2 To identify and describe those activities described by caregivers as specific childcare activities.

1.6.3 To identify the most time-consuming childcare activities performed by caregivers in the study population.

1.6.4 To determine and describe time saving methods applied in performing childcare activities by caregivers in the study area.

1.6.5 To determine the nutritional status of the study children and to relate this to childcare practices in the study area.

CHAPTER 2

LITERATURE REVIEW

According to Myers (1992), the meaning of the term **care** differs by discipline; for medical personnel, the term may refer to preventive and curative care for illness and infections. For social welfare professionals, it may refer to the care for children without families. However, Myers defines **care for the child** as responding to the basic needs of the child by taking actions necessary to promote survival, growth and development. Myers therefore identified the following as childcare activities:

providing for security,
sheltering,
clothing,
feeding,
bathing,
supervising a child's toilet,
preventing and attending to sickness
nurturing and showing affection,
interacting with and stimulating a child
playing,
socializing a child to its culture.

FAO/WHO (1992) adopts the same definition, but they include the care of other family members "... *the provision in the household and the community of time, attention and support to meet the physical, mental and social needs of the growing child and other family members.*"

Care for the child is necessary as an enabling factor for utilization of food and health services by the child (UNICEF,1990). Thus availability of adequate good quality food and health services, plus a healthy environment are not enough on their own, to ensure adequate nutrition and good health in children.

2.1: THE NEED FOR ADEQUATE CARE IN BABYHOOD

The years of babyhood (2 weeks - 2 years), are the true foundation of life (Hurlock, 1968). During this period, the foundation of many behaviour patterns, many attitudes towards others and towards self and many patterns of emotional expressions are established. Upon these foundations will be built the adult personality structure. Unicef (1990) adds that lack of adequate care at this stage may adversely affect the rate of growth and development of the child.

Child development is a process of change in which the child learns to handle ever more complex levels of moving, thinking, feeling, and relating to others (Myers, 1992). He also states that child development is determined by a continuous interaction between biological predispositions, hereditary factors and environmental experiences. Hereditary factors are expressed through the process of

maturation of the organisms which occurs over a wide range of environmental conditions. If the environment is inadequate, in some way, maturation process will be affected (Atkinson et al., 1983).

One way in which the environment can be inadequate is lack of provision of adequate care to the child by the mother or mother substitute. UNICEF (1989) argues that the main reasons for the slower rate of growth seen in most rural Kenyan children between ages of 6-24 months are environmental. They relate to the way the child is fed and cared for rather than the children's genetic make-up. The critical environmental factors are the burden of repeated infections and the low food intake which could be attributed to poor childcare and environmental sanitation.

2.2: CONSTRAINTS TO MATERNAL/CAREGIVER TIME ALLOCATION FOR CHILDCARE AND THE EFFECTS OF THE FACTORS ON THE CHILD

2.2.1: Maternal/Caregiver Time Allocation for Childcare

Twenty-nine studies reviewed by Leslie (1989) reveal less time for childcare. than for other maternal activities. According to these studies, the proportion of the women's time devoted to childcare is small compared to that devoted to other maternal activities. Two major studies in Kenya have studied childcare; the Embu study (CRSP, 1987) and the Awendo study (Rubin,1989). Both studies also indicate that the time for childcare was less than that spent on other activities. A study in Machakos district, Kenya by Steenbergen, et al.,(984) on the other hand revealed that generally more time was spent on childcare compared to other activities of the mothers. All these studies do not provide a clear picture of how the childcare time is spent, hence it is difficult to understand which childcare activities are more time consuming for the mothers.

Leslie (1988) gives two possible reasons as to why most time allocation studies do not give a clear picture of time spent on childcare. First, that both women with and without children are included in the study which would lead to low average amount of time spent on childcare. Second, childcare is likely to be performed by mothers at the same

time as other tasks and the researchers would record the activities jointly. UNICEF (1992), also observes: "It is difficult to determine time spent in childcare since it tends to be concurrent with other activities; and many aspects of childcare such as teaching, conversing or holding a child may be considered leisure, not childcare to the woman." There are studies however, which, though not giving the total time spent on childcare, reveal the time spent on specific childcare activities. For example, studies on breastfeeding time in Ghana, Northern Cameroon and in the Philippines reported duration of 50 minutes, 56 minutes and 90 minutes per day respectively. Another study in the Philippines reported a duration of breastfeeding of 69 minutes a day for poor mothers and 116 minutes a day for rich mothers (Leslie, 1988). Time for fetching fuelwood among the rural communities has also been reported to be between 45-90 minutes a day in Kisii, Kenya (Kenya, 1988), and 8 hours per week in Malawi (Brouwer, 1992).

As seen in the model in figure 1.1, depending on the ability of the mother or the caretaker to overcome the constraints, time allocation for child care can lead to good child care which will eventually lead to a healthy child or poor child care may leading to disability; stunting, wasting and underweight, that finally result in impaired child growth and development.

2.2.2 Knowledge of Important Caregiving Behaviours

With reference to the model in figure 1.1, it is clear that a mother's knowledge about childcare determines the care she chooses to give to her child.

Both UNICEF (1992) and FAO/WHO (1992) have given a distinction between two types of caregiving behaviours. The first type involves caregiving behaviours that are intended to return a child to a previously acceptable state of health and development and is termed as compensatory care . Examples of compensatory caregiving behaviours are seeking for medical assistance in case of a sick child, giving a sick child medicine or encouraging an anorexic child to eat. Studies have shown that when children are healthy, maternal encouragement to eat is minimal , but when infants are ill, especially with diarrhoeal diseases and refuse food, mothers are more active in caregiving than when the child is not ill.

The second type of caring behaviours is termed as enhancement care and it involves those activities that are intended to increase the child's capabilities, growth or enhance further development. Examples of enhancement care include active feeding of the child by encouraging the child to eat, offering second helpings, feeding the child,

holding a feeding utensil for the child, food preparation for the child or stimulating a child in play and language. Studies from Mexico, Bangladesh, Nicaragua, Colombia, Great Britain and Jamaica show that active feeding behaviours increase the amount of food ingested and tend to be associated with better nutritional status (WHO/FAO, 1992).

Other studies have also shown that parents who are assisted in child stimulation through education seem to increase their attention to their children's food needs and channel more food to their children (UNICEF, 1992). Thus increased awareness of caregiving behaviours among the caregivers can lead to improved nutritional status of the child.

If parents do not value enhancement child care, extra time may be spent on other activities deemed to have a higher value to a greater number, such as income generation, rather than child care (UNICEF, 1992).

However, the demand for care or the perception of the importance of early and intense investment in the child will vary from culture to culture and between individuals. Care needs to be understood not only from a societal perspective, but also from the perspective of the local caregivers, that is , the mothers and the alternative caregivers (UNICEF, 1992).

2.2.3: Value of Children in Society and Effects on Childcare

To some extent, the amount and quality of care that a child receives depends on how the society or family views the child and in some cases is influenced by gender.

UNICEF (1992) reports that Ravindran (1986) found son preference in many parts of the world, particularly in the middle East and South East Asia where childcare for the girls was not as good as for the boys. The girls, therefore, have higher rates of morbidity, mortality and less food allocation. They are also less likely to be provided with medical care and receive less schooling.

Among the Luo community of Kenya, "a male child is looked upon as a dynamic element in the lineal structure. On the other hand, a female child, though a potential source of wealth, is regarded as an exporter of fertility from her parents lineage to the lineage of her husband (Ominde, 1987). This difference in the way a male and female child is viewed in traditional societies could lead to differences in the care and up-bringing of children in the community. Thus cultural preference for certain child characteristics may influence the caring behaviour that the child receives.

2.2.4: Maternal Workload

Women's daily activities range from income-earning activities to unpaid family labour (Myers, 1992). The income-generating activities take place either outside the home or inside the home. The unpaid family labour on the other hand involves much of what the mother does at home though some of the activities sometimes take place outside the home, for example, looking for fuel or going to buy food from the market. Maternal activities which constitute unpaid family labour are food production, processing and feeding the family. Other activities are domestic chores such as collecting firewood, collecting water, laundry and childcare.

The above maternal activities compete for the mother's time and energy. The low-income rural women, especially, face competing time demands for agricultural work, home production, childcare and leisure, with few if any labour-saving technologies to help (Leslie, 1988). Women, therefore, have to carefully decide on energy and time allocation for tasks according to their importance and practicability (Basse, 1984).

The extent to which maternal workload affects time allocation for child care depends on two factors; first,

the availability of resources such as money and manpower and second, the socio-demographic profile of the family. Included in the latter are, age of the child, number of children in the household, birth spacing of the children, and the stage of family life cycle. The most time-demanding stage in the family life cycle is the *expanding family stage* where *"the coming of children requires the greatest adjustments in the time patterns of the homemaker"* (Nickel and Dorsey, 1983).

2.2.5: Time-Saving Methods in Childcare Activities

Many activities compete for mother's time and energy, hence, many tasks can not be well covered and shortcuts are usually taken. A common time-saving practice is reduction in frequency of cooking meals, which in turn reduces time for collecting fuelwood and water. Other methods are use of unboiled water for drinking and use of easy to cook foods (Basse, 1984). Most of these shortcuts which women use to save time and energy are detrimental to the child's health and nutritional status. Reduction in frequency of cooking meals, for example, leads to reduced meal frequency and increase in food-borne infection when cold food is eaten. Use of foods which can be quickly cooked may reduce the consumption of energy-rich and protein-rich foods, especially the pulses.

There are, however, a number of technological innovations that have been introduced to reduce the time women spend in household production tasks. Examples are closer water supply, improved stoves, transport system that men are willing to share, and grinding or processing mechanisms. An analysis of a number of technology interventions indicated that some, but not all, actually decreased the time women spent in the activity (FAO/WHO, 1992).

Leslie (1988) reports that Whiting and Krystall's study in Kenya, for example, revealed that women's workload were not reduced by making water available closer to home in order to save their time in fetching water. Reduction in distance to water source only led to increase in the number of trips to the water source. Thus, it is not yet clear as to whether, if the women's workload were reduced, women would spend more time on child care (UNICEF, 1992) unless they prioritize it as an important activity compared to other competing demands such as income generation, food preparation, cleaning or rest (FAO/ WHO, 1992).

The knowledge and use of work simplification techniques are, however, necessary for the mothers of children below two years old so that they may have more free time and energy for child care activities that can enhance growth, development and survival of the children.

2.2.6: The Alternative Caregivers

Mothers are the primary child caregivers in the home. Other family members, siblings or neighbours and friends may also assist in caretaking at some time of the day.

Grandparents or other relatives living with the family or living nearby are usually preferred to neighbours or friend because they are part of the family. They are preferred to siblings because they are mature (Myers, 1992).

Older siblings, mostly girls, are common alternative caregivers in developing countries (Joekes ,1989). Young girls from as young as four years are expected to assist mothers with the care of younger siblings (Paolisso et. al., 1989). Thus children at age three or four are usually not really 'cared for' but are caregivers themselves (Unicef, 1992). When the need for the alternative caretaker is great and no other solution is present, older children are kept out of school to help at home while mothers work (Myers, 1992). Often, sibling care occurs when a mother or other adult is nearby so that emergencies can be handled. Thus due to the little time available for child care, in most cases, relatively small children are put in the care of their younger brothers or sisters (Holmboe-Ottesen, 1986).

Decrease in caretaking has been found to increase the risk of infant diarrhoea in Embu, Kenya (Paolisso et.al., 1989), (child held 0-19% of the observed time, diarrhoea prevalence = 18%, while child held 60-100% of the observed time, diarrhoea prevalence = 4.5%). In the same study, participation of older children in caretaking responsibilities was also found to reduce the risk of diarrhoea among infants in the family,

2.2.7: Maternal Health Status and its effect on childcare

The principal providers of care in many households are women and the capacity to provide care at the household level largely depends on the health of the mother (FAO/ WHO, 1992).

Poor physical and mental health of the mother are some of the major constraints to providing care, especially in the household. Physical health includes nutrition, medical care services prenatal care and care for the girl child. Improved physical health and nutrition of the mother is generally associated with improved caring capacity. Studies have shown that anaemia and current Protein - Energy - Malnutrition for women may reduce responsive enhancing interaction with children.

Mental health needs of the woman include self confidence, absence of depression, and reasonable levels of stress. Self confidence has been linked with child care when mothers with more confidence were found to be more willing to try to feed anorexic children. Rutter (Unicef, 1992) reviewed research in the United States linking maternal depression with lack of adequate care and supervision of children and associated family risk factors. Many studies showed impaired patterns of synchrony in interactions between mother and child that seemed to be related to the depression rather than to associated family risk factors.

2.2.8: Care and Malnutrition in Children

Malnutrition may not be a direct result of maldistribution of maternal time for childcare. However, poor childcare may result from poor time allocation for childcare activities and this affects the child's dietary intake and therefore nutritional status in various ways: through prenatal nutrition and energy expenditure, breast feeding and infant feeding behaviours, timing of feeding, meal frequency amount of food per meal and other factors that may be related to the child's dietary intake (FAO/ WHO, 1992). Poor care may also lead to infections and infestations, hence, malnutrition which contributes to the impaired growth and development indicated in the model in figure 1.1.

2.3 GAPS IN KNOWLEDGE.

Although studies have been done on the constraints that surround time allocation for child care, most of them have not been directly linked to maternal or caretaker's time allocation for child care activities. Furthermore, the studies that report time for childcare are not clear on how that time is distributed among various childcare activities

CHAPTER 3

STUDY SITE

3.1 Geographic location

The study was conducted in Lower Nyakach, one of the six administrative divisions of Kisumu District, Kenya. Lower Nyakach is about 50 kilometres from Kisumu town and about 450 kilometres from Nairobi city. It is divided into two locations: North Nyakach and Central Nyakach. Central Nyakach location, Jimo East sub-location, was the study site. (Appendix 4).

3.2 Population

Lower Nyakach Division, which is mainly occupied by the Luo community, as at 1988, had an estimated population of 46,497, and was projected to be 53,914 in 1993 (Kenya,1989). Jimo East sub-location had a total population of 3,147 by 1988, with an annual growth rate of 3.8% (Aga Khan Primary Health Care:1989).

3.3 Climatic conditions

Mean annual maximum temperatures range from 25° C - 30° C and mean annual minimum ranges from 9° C -18° C. Rainfall in the district varies considerably with altitude and with proximity to the highlands of Nandi Escarpment and the Tinderet Massive. Mean annual rainfall varies from less

than 1,000mm yearly along the lakeshore to 1,500mm in the East and over 1,800mm along the northern boundary (see map in appendix 4). The area has two rainy seasons a year with the long rains occurring in April/May while the short rains occur in August/September. The short rains are unreliable and are scattered over a long period such that cultivation of second crops is difficult.

3.4 Crop production

In Lower Nyakach Division, most people practice mixed cropping subsistence farming. The farms are small fragmented pieces of land. Food crops grown include maize, sorghum, sweet potatoes and cassava while cotton and sisal are grown as cash crops. Cotton forms the major cash crop though it is not grown by most people. Sisal, which in most cases is part of land demarcation, is not viewed as a cash crop, none the less, most women depend on ropemaking using sisal as their source of income.

3.5 Livestock production

The community of Lower Nyakach mainly keeps the local breeds of cattle, sheep, goats and donkeys which communally graze on the already overgrazed pasture. Though poultry keeping is also an important activity, local chicken is preferred to grade chicken, and both egg production and consumption are poor here (Kenya, 1990).

3.6 Housing

Dwellings in the Nyakach community mainly consist of grass thatched mud-walled houses although there are also a number of semi-permanent and permanent houses.

3.7 Water sources

The main source of water in the study area is tap water, mainly in form of communal water points. Other sources of water are Asawo stream, dams and ponds and wells.

3.8 Fuel sources

The main source of fuel for cooking in Lower Nyakach is firewood, mainly in form of split wood, branches, twigs, shrubs, sisal leaves and stalk. Agricultural residues (maize, millet, cassava and cotton stalks, and maize cobs) are also used for cooking. The tree branches are most preferred, hence women and girls travel long distances in search of them from the forested areas. The other sources of fuel are charcoal and paraffin which are sold in the market centres.

3.9 Health services

Prior to November 1992 when the Aga Khan Health Foundation started operating the Onyuongo Community Based Health Centre, Lower Nyakach Division was poorly served with health facilities. The majority of the households are four

to 12 kilometres from a health facility. However, the division has the highest percent, in the district, of households within easy reach to Traditional Birth Attendants and Community Health Workers (Kenya, 1990).

3.10 Income-generating activities

In Lower Nyakach, the main sources of income, especially for those not involved in salaried employment, range from sale of animals to sale of crops and shopkeeping. Trade in fish and baskets are also important sources of income for many people. A number of households also derive their income from ropemaking.

CHAPTER 4

METHODOLOGY

4.1 SUMMARY

A descriptive cross sectional survey was carried out in two phases between October 1992 and early January 1993. The first phase involved administering questionnaires and focus group discussion with mothers and assessment of anthropometric measurements of the index child. The second phase involved observing and timing of child care activities as they occurred among a sub-sample of the study population. Households with children aged 0-24 months were the target group for the study, hence their members constituted the study population

4.2 STUDY DESIGN

The study was cross-sectional in nature. A total of 122 households with children aged 0-24 months were selected for the study.

4.3 SAMPLE SIZE

The total population for the study area was less than 10,000, hence the following formula was used in calculating the sample size for questionnaire and anthropometry:

$$n_f = n / 1+(n/N)$$

Where:

n_f = the required sample size since the study population is less than 10,000 .

n = sample size if the population were more than 10,000

N = the size of the study population, 172.

BUT:

$$n = z^2pq /d^2$$

WHERE,

z = level of certainty set at 1.96

p = % of children below two years of age who were malnourished in the division (usually estimated at 50%).

q = % of children below two years of age who were not malnourished in the division (50%).

d = the acceptable range of error set at 5% for the study

$$n = 1.96^2 (0.5 \times 0.5)/0.05^2$$
$$= 384$$

Using the above formula, the sample size was calculated as shown :

$$n_f = 384 /1+(384/172)$$
$$= 120$$

Therefore 120 was the minimum sample size to which questionnaire and anthropometry were applied.

For the observation phase, a sub-sample of 50 households was selected from the sample of 120. 50 is large enough for statistical analysis.

Equal proportionate sampling technique was however used in selecting households for the two age groups in the sub-sample using the following formula:

$$n1 = (N1 / N1+N2) \times ns$$
$$n2 = (N2 / N1+N2) \times ns$$

and

$$ns = n1 + n2$$

Where:

ns = required sample size for the sub-sample

n1 = required sample size for 1st stratum, <13 month old children

n2 = required sample size for 2nd stratum, 13-24 month old children

N1 = the population size of first stratum

N2 = the population size of the second stratum.

Using the above formula, the sub-sample size for the strata were calculated as follows:

n1 = (48/78) x 50

= 31

Thus 31 was the minimum number of households with children aged below 13 months to be observed

while,

n2 = (30/78) x 50

= 19 was the minimum number of households with children aged 13-24 months old to be observed.

Hence, ns = 31+19

= 50 which was the sub-sample on which observation observations were conducted.

4.4 SAMPLING PROCEDURE

Multistage sampling technique was applied. Jimo East sub-location was randomly selected as the Primary Sampling unit (PSU) from which the samples were picked in stages.

STAGE 1: Nine villages were identified in the PSU and the total number of households identified with children aged 0-24 months was 172.

STAGE 2: In two randomly selected villages, 12 households were randomly selected for focus group discussion.

STAGE 3: One hundred and twenty two (122) households were randomly selected from all the 9 villages for the demographic questionnaire and anthropometric measurements (phase one of the study)

STAGE 4: Five villages out of nine identified villages were randomly selected for phase two of the study, which was observation.

Five villages were selected because there were a total of nine villages, and 5 is the median of 9.

STAGE 5: PROPORTIONATE SAMPLING

This was necessary to give each age group equal chance of being selected. Study households in the above five villages

were stratified by age of the child into two strata, N1 and N2,

where:

N1 = Households with <13 month old children, (48 in number), from which 31 children were randomly selected (n1).

N2 = Households with children aged 13-24 months, (30 in number), from which 19 children were randomly selected (n2).

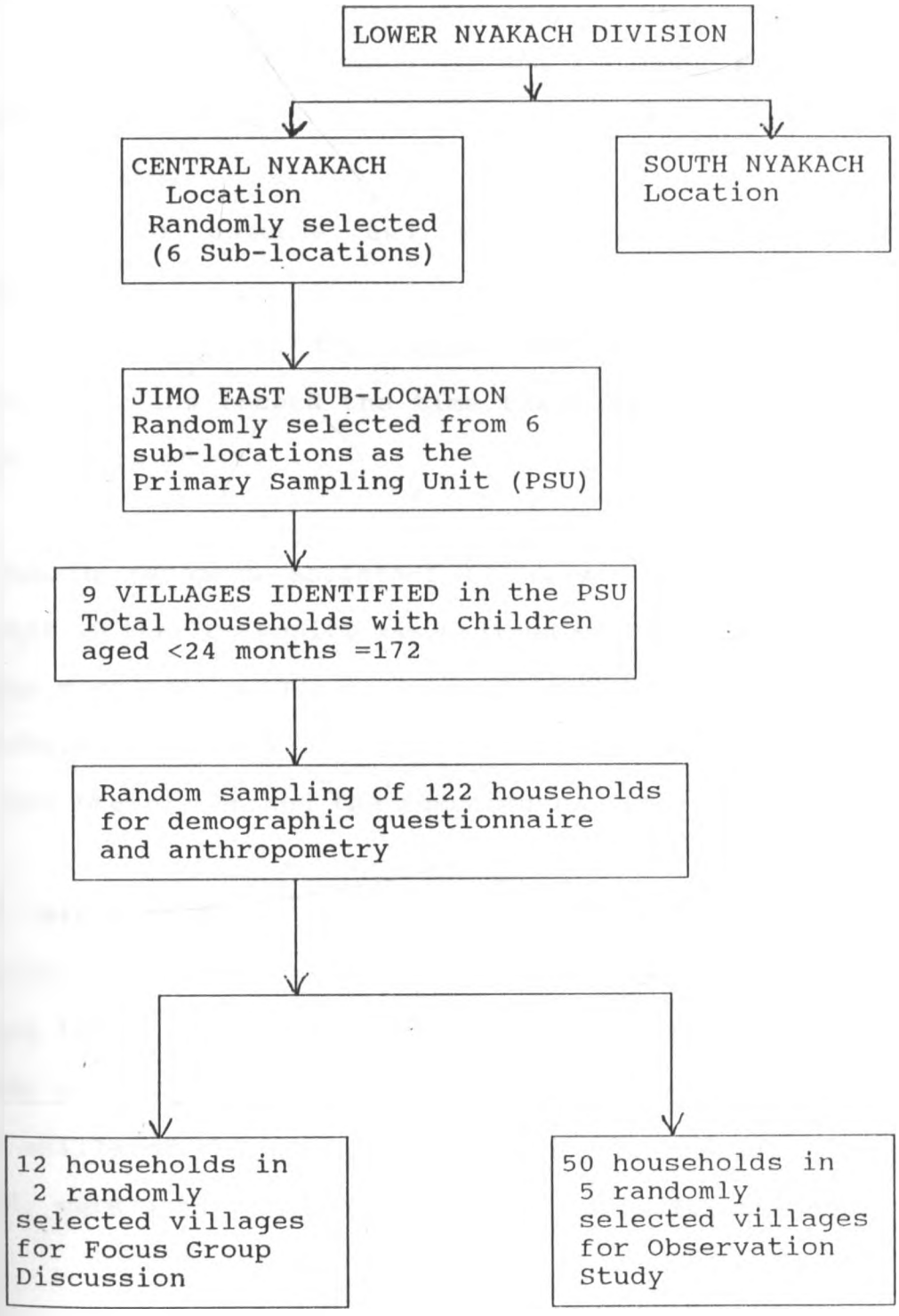
Stratification of households by age of the child was necessary in this study in order to have:

1. the age groups of up to 12 months and 13-24 months well represented,
2. increased accuracy of results and
3. to control for age as a confounder.

For the Focus Group Discussion, 12 households were randomly sampled from two randomly selected villages.

The above sampling procedure is shown in figure 4.1.

IGURE 4.1: SCHEMATIC PRESENTATION OF THE SAMPLING PROCEDURE.



4.5 TRAINING OF RESEARCH ASSISTANTS

Three research assistants, all females of form four level of education, were identified and trained. Emphasis was made on proper methodologies of observation and included the following:

1. To observe and record maternal activities accurately

2. To time the child care activities observed accurately and record the time taken by activity on the time budget sheet.

A fourth research assistant who was a community health worker in that community was trained to facilitate in focus group discussions. Time was spent on translating guideline questions (Appendix 3) into the local language, 'Dholuo', by the translator and the researcher.

4.6 PILOT STUDY

A pilot study was conducted in one village which was not among those in the actual study. The purpose of the pilot study was to pretest the research instruments and to asses the skills of the research assistants. The results of the study were used to adjust the final tools for the study.

4.7. PHASE ONE OF DATA COLLECTION

4.7.1 Questionnaire

A structured questionnaire was used to collect information on:

1. household demographic characteristics
2. reported maternal and childcare activities,
3. work simplification techniques in childcare,
4. anthropometric measurements were also taken during this phase to asses nutritional status of children aged two years and below.

All the study children were also observed for physical cleanliness in terms of their clothes, body, face, nose and playing environment. The child was considered clean if he had more than three of the above factors observed as clean, if not, then he was rated dirty.

As a means of verifying and also to provide validity for the information collected by questionnaires, focus group discussion was held to obtain information on maternal and childcare activities as well as the work simplification techniques in childcare (see appendix 4 for focus group discussion questions).

4.7.2 Anthropometry

The measurements of weight and height, combined with the data on age and sex were used to assess the nutritional status of the 120 study children. Weight and height measurements of the children were taken to the nearest 0.1 kg and 0.1 cm respectively (appendix 3) as described by Quinn (1992). To get the age (in months) of the child, the mothers were asked to recall the date of birth of the child and if possible, produce the Child Health Card for the child's clinic. For those children who did not have the cards, their mothers were able to recall their date of birth.

The raw values of weight, height and age, in combination with sex were transformed into nutritional indices of weight-for-height, height-for-age and weight-for-age using the CDC ANTHROPOMETRY computer program. These indices have been presented as Z-Scores (Standard Deviation Scores) in this study. The children who were below - 2.00 SD scores of the above indices were considered malnourished according to the NCHS reference standards (Waterlow, et. al., 1977)

Weight-for-height indicator relates body mass to stature, and is a good indicator of a child's present nutritional status. All children with their weight-for-height (WHZ) values less than -2.00 Z-Score were considered nutritionally wasted, which means that they were thin for their age.

Height-for-age indicator is a measure of linear growth and is a good indicator of past nutritional adequacy. All children with their height-for-age values below -2.00 Z-Scores were considered nutritionally stunted, meaning that they were short for their age when compared to the standard population.

Weight-for-age indicator is a measure of both the weight contributed by muscles and fat mass and that contributed by skeletal mass. All children with their weight-for-age values less than -2.00 Z-Scores were considered underweight.

4.8 PHASE TWO OF DATA COLLECTION - OBSERVATION

In the second phase of the survey, data on time-allocation for different childcare activities was collected on a sub-sample of 50 households.

A modified spot check methodology was used (Johnson, 1990). This method has been found useful in studies where continuous observation methods have failed to give more accurate data (CRSP, 1987).

Observations were conducted between 7.00 a.m. and 6.30 p.m. each day from Monday to Saturday. There were no observations conducted on Sunday, this being a day that is not considered normal since most mothers may spend their time away from home.

Ninety-minute observation units were randomly made per day per household untill all the 9 observation hours, 7.00 a.m. to 6.30 p.m. had been covered in each household. No appointments were made with the households and it was sometimes difficult to find the mother or the alternative caretaker with the child at home. All effort was, however, made to cover the observation period for each household in full.

Each research assistant was provided with two digital stop watches for timing activities. Childcare activities performed by caregivers were observed and timed as they took place. The time taken for each activity was recorded in minutes in the observation sheet (appendix 2). Different stop watches were used for different childcare activities, especially where more than one activity was going on at the same time.

Activities were categorized into **complete activities**, those that were timed from the beginning to the end , and **incomplete activities** that were either on-going by the time observation started or were left still going on at the end of the fixed observation unit which was 90 minutes. The incomplete activities were marked with a star (*) on the record sheet.

The observation methodology used was therefore the best method that could be used in the community because it ensured:

i). representativeness of the time of the day when mothers start their daily chores in the morning to the time they have their evening meal

ii). that mothers carried out their activities normally despite the presence of the researcher, hence it was possible to capture and time most childcare activities during the observation period.

iii). short observation periods reduced weariness for the mothers under observation.

4.9 DATA CLEANING, PROCESSING AND ANALYSIS

The Statistical Package for Social Science (SPSS/PC+) program was used for data entry except for the anthropometric data that was entered in the CDC ANTHROPOMETRY program.

The total time per childcare activity per day in each household, was obtained using the following formula:

Total Time per day = A + B*/2

Where A = Total time for observations where the activity is timed from start to stop (completed activities).

B* = Total time for observations where activity is not timed from the beginning to the end (incomplete activities).

B* is divided by two following the assumption that activities are incomplete randomly throughout the observation period, six observation units per household, and therefore on average, they are only observed for half of the observation period, (Kahn, et al., 1989). When the incomplete childcare activities were not included in the total time calculation, the results were only slightly different from when they were included, (Compare table 5.14 with appendix 1).

The total time data was then entered in the SPSS Program with other data. The data was then cleaned, edited and frequencies for non-continuous data and the mean values for the continuous data obtained before carrying out statistical analysis.

Statistical analysis was carried out with the SPSS Program where simple cross tabulations identified relations among variables. Correlation and X^2 test statistics were used to determine association between: maternal characteristics, child characteristics, childcare activities and nutritional status of the study children.

CHAPTER 5

RESULTS

5.1 POPULATION DATA

The study covered a total of 122 households with children 0-24 months of age. Two of the households, however, dropped out from the study because the mothers left the village to join their husbands in towns. The total population in the 120 households whose data were analyzed was 717, of whom 213 (29.7%) were children below five years of age. The demographic characteristics of the study population are summarised in Table 5.1.

TABLE 5.1 DISTRIBUTION OF STUDY POPULATION BY SELECTED DEMOGRAPHIC CHARACTERISTICS

CHARACTERISTIC	HOUSEHOLDS	
	Frequency	Mean
Study households	120	
Average household size		6 persons
Total population studied	717	
Under five year old children	213	
Households with >6 people	58.3%	
Households with <6 people	41.7%	

5.1.1 Socio-demographic Characteristics

The majority of the households, 69.2%, were of monogamous marriages, while 28% were of polygamous marriages, and the rest (2.8%), were of single unmarried mothers. None of the study mothers were separated, divorced or widowed.

Table 5.2 shows four socio-demographic characteristics, namely; maternal age, education, occupation and religion. Most of the mothers (57.5%), were between ages 20-29 years and only 6% were above 40 years of age. The bulk of the mothers were primary school leavers, the majority (55%), having reached class 5-8. Only 15.8% had never attended formal school. The rest had at least some secondary school education. The literacy level was higher (83.3%) among the younger mothers of less 30 years of age than among the older mothers of over 30 years of age (36.1%). This difference in maternal education with age was highly significant (X^2 =26.3, $P<0.01$).

Subsistence farming was the commonest occupation for the study mothers, practised by 82.5% of them , while a few (17.5%), were involved in small scale businesses like trading in cereals, vegetables, baskets and rope making.

Most mothers, (70%), were Christian Protestants who belonged to various churches like Church of Province of Kenya, African Inland Church (A.I.C.), 'Roho Maler', 'Roho Fweny', 'Duond Warruok' and Legio Maria. The rest were either Catholics or SDAs.

TABLE 5.2: DISTRIBUTION OF STUDY MOTHERS BY AGE, EDUCATION, OCCUPATION AND RELIGION, N=120

MATERNAL CHARACTERISTIC		n	%
AGE GROUP:	< 20 Years	15	12.5
	20-29 "	69	57.5
	30-39 "	29	24.2
	> 40 "	7	5.8
EDUCATION:	None	19	15.8
	primary 1-4	18	15.0
	primary 5-8	66	55.0
	secondary and above	17	14.2
OCCUPATION:	Subsistence farmer	99	82.5
	Petty traders	21	17.5
RELIGION :	Protestants	84	70.0
	Catholic	26	21.7
	SDA	10	8.3

5.1.2 The Study Children

The age and sex distribution of the study children are shown in Table 5.3. The mean age of the study children was 10.8 (S.D=6.4) months, and half of the children were at least 10.5 months old. There were 54 boys and 66 girls, giving a male : female ratio of 1 : 1.2.

TABLE 5.3: DISTRIBUTION OF STUDY CHILDREN BY AGE AND SEX

AGE IN MONTHS (N=120)	%		
	ALL	MALES	FEMALES
0-5	27.5	13.3	14.2
6-12	34.2	13.3	20.8
13-24	38.3	18.3	20.0
TOTAL	100	45	55

Table 5.3b shows the distribution of study children by selected child characteristics. There were two or more children below the age of five in 64.2% of the households while 35.8% had only one under five year old child. The mean birth spacing reported was 29 months with a minimum of 12 months and a maximum of 60 months. Most of the children in the study (93%), were still breastfeeding. Of the 7% who had stopped breastfeeding, the mean weaning age was 4.2 months (S.D.=2.8).

Observation results on cleanliness showed that 46.7% of the children were clean while 53.7% were dirty (Section 4.7 for criteria used to determine cleanliness).

TABLE 5.3B: DISTRIBUTION OF STUDY CHILDREN BY SELECTED CHILD CHARACTERISTICS

CHARACTERISTIC	PROPORTION %	MEAN X
No. of <5's: 1	35.8	
>1	64.2	
Mean age (Months)		10.8 (S.D=6.4)
Birth spacing (Months		29 (12-60)
Children breastfeedin	93.0	
Weaning age		4.2 (S.D=2.8)
Children observed as clean	46.7	

5.1.3 The Primary Alternative Caregivers

Although the primary caregiver of the child was the mother, 77.5% of the households reported primary alternative caregivers who normally took care of the child. Most of these alternative caregivers were the elder sibling whose ages mainly ranged between 3 and 9 years. The other caregivers were either grandmothers or other relatives. The oldest caregivers was over 50 years old. Table 5.4 shows selected characteristics of the alternative caregivers where it is noted that not only were the majority of the caregivers young (under 12 years), but their education level was also low with 25.8% having no education at all.

TABLE 5.4: SELECTED CHARACTERISTICS OF THE PRIMARY ALTERNATIVE CAREGIVER N=120

CAREGIVERS' CHARACTERISTICS		n	%
RELATIONSHIP WITH CHILD:			
	Sister/Brother	75	62.4
	Grandmother	19	16.1
	Others*	26	21.5
AGE:	Under 12 years	101	84.0
	Over 12 years	19	16.0
EDUCATION:	No education	31	25.8
	Primary 1-4	65	53.8
	Primary 5-8	23	19.4
	Secondary	1	1.1

* Include father, co-wife, relatives and neighbours

5.1.4 Housing, Sanitation and Water Sources

Most households (76.7%) had grass thatched, mud-walled temporary houses. A few of the houses, 6.7%, had iron roofs with stone walls and cemented floors (permanent houses). The rest (16.6%), were of semi-permanent nature in that they were iron roofed with non-cemented earth floors and mud walls.

Majority of households (66.7%) had grass thatched, mud-walled pit latrines situated a short distance from the dwellings, while the rest (33.3%) had no latrines. The mode of household rubbish disposal was good in 62% of the households where the rubbish was either burnt or buried. In 38% of the households, the mode of rubbish disposal was

poor for it was both reported and observed to be indiscriminate.

Table 5.5 shows the distribution of households by their water sources and time taken to water source. The use of the various sources was determined by their availability. The water sources available to the community were clean tap water from communal water-points (90.8%), streams (60.8%), dams and ponds (25%). Boreholes were also main water source for some people (8.3%) in the community.

TABLE 5.5: DISTRIBUTION OF HOUSEHOLDS BY WATER SOURCES AND TOTAL TIME REQUIRED TO FETCH WATER.

WATER SOURCE	% HOUSEHOLDS (N=120)	TOTAL TIME (MINUTES)
Tap	90.8	35 (30)
Stream	60.8	31 (22)
Dam/Pond	25.0	20 (12)
Borehole/well	8.3	16 (16)

The figures in parentheses are standard deviations.

5.2 MATERNAL ACTIVITIES

The study mothers were interviewed, to determine activities which they performed from the time they woke up in the morning to the time they went to sleep on the day prior to the interview. No probing was made at the time of the interview.

Table 5.6 shows that family food preparation and cooking were reported by the majority (96%), while childcare activities such as breastfeeding and comforting the child were the least reported activities.

TABLE 5.6 DISTRIBUTION OF REPORTED MATERNAL ACTIVITIES BY HOUSEHOLDS

REPORTED MATERNAL ACTIVITY	HOUSEHOLDS (N=120) %
Family food preparation and cooking	96
Fetching water	76
Care of child's clothes	75
Household chores (sweeping, dishwashing)	72
Care of child's body	64
Fetching firewood	62
Income generating activity	62
Looking for food	61
Farmwork*	50
Cooking for child	50
Feeding child	22
Comforting child	5
Breastfeeding	3

* *Excluding care of livestock*

Although family food preparation was the most reported Activity by mothers, observation indicated that comforting the child (mainly in form of holding) and household chores such as sweeping the house, and cleaning dishes were the most common activities performed. Farmwork, which had been

reported by 50% of the households, was only observed in 16% of the households as indicated in table 5.7. It is also noted here that breastfeeding, although infrequently reported, was observed to be a common activity.

TABLE 5.7 DISTRIBUTION OF OBSERVED MATERNAL ACTIVITIES BY HOUSEHOLDS

OBSERVED MATERNAL ACTIVITY	HOUSEHOLDS (N=50) %
Comforting child	100
Household chores (sweeping, dishwashing)	100
Care of child's body	98
Family food preparation	96
Feeding child on liquid food	94
Cooking for child	92
Fetching water	92
Care of child's clothes	90
Breast feeding	84
Looking for food	78
Income generating activity	56
Fetching firewood	54
Feeding child on solid food	46
Farmwork	16
Care of livestock	10

A cross-tabulation between the observed maternal activities and age of the child (table 5.8), revealed that mothers of older children perform more activities than those of younger children. It is shown that of the 15 activities observed, a higher proportion of mothers of older children carried out more diverse activities (8), as compared to mothers of younger children (4). These observed differences were significant for breastfeeding where mothers with younger children breastfed more (93%) than those with younger children ($P<0.05$) and feeding child on solid foods where the older children fed more (78%) than the younger children ($P<0.05$).

TABLE 5.8 DISTRIBUTION OF OBSERVED MATERNAL ACTIVITIES BY AGE OF CHILD

OBSERVED MATERNAL ACTIVITY	CHILD'S AGE (MONTHS) 0-12(n=31) %	13-24(n=19) %	P-VALUE
Comfort/Hold child	100	100	>0.05
Household chores (Sweeping, dishes)	100	100	>0.05
Care of Child's body	97	100	>0.05
Family Food preparation	93	100	>0.05
Feeding Child on Liquid Food	90	100	>0.05
Cooking for child	90	95	>0.05
Fetching water	90	95	>0.05
Care of child's clothes	90	89	>0.05
Breastfeeding	93	68	<0.05*
Looking for food	80	73	>0.05
Income-generating activity	61	47	>0.05
Fetching firewood	48	63	>0.05
Feeding child on solid food	25	78	<0.05*
Farmwork	16	16	>0.05
Care of livestock	6	6	>0.05

** significant difference at p<0.05*

5.3 CHILDCARE ACTIVITIES

Mothers were asked to mention which of their daily activities they would define specifically as childcare activities. Table 5.9 shows the distribution of reported childcare activities by households. Care of child's clothes (91%), cooking for the child (85%) and care of child's body (78%) were the activities that most mothers considered as childcare activities. Fetching water, firewood and farmwork, though being important activities that enable mothers to prepare food for the child, are not considered as childcare activities by the majority of the mothers.

TABLE 5.9: DISTRIBUTION OF REPORTED CHILDCARE ACTIVITIES BY HOUSEHOLDS

REPORTED CHILDCARE ACTIVITY	HOUSEHOLDS (N=120) %
Care of child's clothes	91
Cooking for child	85
Care of child's body	78
Feeding child	55
Taking child for immunization	52
Seeking for medical assistance	28
Looking for food	9
Breast feeding	8
Fetching water	5
Farmwork	3
Fetching firewood	2

Mothers were asked to rank the childcare activities (Table 5.10). Out of the 120 mothers interviewed, 46% ranked cooking for child in the first order while 29% ranked care of child's clothes in this order. It is observed here that no mother ranked breastfeeding or comforting the child in the first order.

TABLE 5.10: DISTRIBUTION OF CHILDCARE ACTIVITIES BY MATERNAL RANKING OF ACTIVITIES

REPORTED CHILDCARE ACTIVITY	HOUSEHOLDS (N=120) % BY RANK				
	1	2	3	4	5
Cooking for child	46	26	12	6	0
Care of child's clothes	29	22	21	24	3
Care of child's body	14	26	31	12	0
Feeding child	7	24	21	13	1
Looking for food	3	1	2	2	0
Fetching water	2	0	3	1	1
Fetching firewood	0	1	1	2	0
Breast feeding	0	1	0	3	4
Comfort/hold child	0	0	3	2	2

Table 5.11 depicts childcare activities ranked in the first 3 categories cross-tabulated with certain maternal characteristics. Maternal ranking of childcare activities did not significantly vary with maternal characteristics.

TABLE 5.11: DISTRIBUTION OF HIGHLY RANKED CHILDCARE ACTIVITIES BY SELECTED MATERNAL CHARACTERISTICS

MATERNAL CHARACTERISTICS	CHILDCARE ACTIVITIES*			
	Cooking for Child	Care of Child's Clothes	Care of Child's Body	Feeding Child
	n=100 %	n=86 %	n=85 %	n=62 %
MATERNAL AGE (YEARS)				
Less than 30	69	71	73	71
30 years and above	31	29	27	29
MATERNAL EDUCATION				
At least 5 years in Primary	68	72	72	66
No Education	32	28	28	34
MARITAL STATUS				
Married	94	94	98	93
Single	6	6	2	7
RELIGION				
Catholics	19	25	24	26
SDA	10	8	7	10
Protestants	71	67	69	64

n = Households that ranked childcare activities in 1st 3 positions see table 5.10 for the ranks)
* Childcare activities ranked by mothers in the 1st three positions

Table 5.12 show that more households with young children, (0-12 months), and with alternative primary child caregivers ranked childcare activities high. These differences were however not significant except for maternal ranking of feeding the child and presence of alternative caregivers, ($P<0.05$). Significantly more mothers, (82%), with alternative caregivers rated feeding the child high than those who had no alternative caregivers.

Table 5.12 show that more households with young children, (0-12 months), and with alternative primary child caregivers ranked childcare activities high. These differences were however not significant except for maternal ranking of feeding the child and presence of alternative caregivers, ($P<0.05$). Significantly more mothers, (82%), with alternative caregivers rated feeding the child high than those who had no alternative caregivers.

TABLE 5.12 DISTRIBUTION OF HIGHLY RANKED CHILDCARE ACTIVITIES BY CHILD'S AGE, PRESENCE OF ALTERNATIVE CARETAKER AND HOUSEHOLD SIZE

	CHILDCARE ACTIVITIES*			
	Cooking for Child n=100 %	Care of Child's Clothes n=86 %	Care of Child's Body n=85 %	Feeding** Child n=62 %
CHILD' AGE (MONTHS)				
0-12	64	63	66	63
13-24	36	47	34	37
ALTERNATIVE CARETAKER				
Present	76	75	79	82
Not Present	24	25	21 S*	18
HOUSEHOLD SIZE				
Less than 6 persons	60	62	62	50
6 persons and above	40	38	38	50

n = the total households who ranked childcare activities in the 1st three positions (table 5.10).
S significant difference at p<0.05.*
** Childcare activities ranked by mothers in the 1st three positions*
*** Excluding Breastfeeding*

TABLE 5.13: DISTRIBUTION OF REPORTED MOST TIME CONSUMING CHILDCARE ACTIVITIES BY HOUSEHOLD

REPORTED MOST TIME CONSUMING CHILDCARE ACTIVITIES	N=120 **n**	**%**
Care of child's clothes	108	90
Cooking for child	51	43
Feeding child	20	17
Care of child's body	7	6
Comforting child	6	5
Looking for food	4	3
Looking firewood	4	3
Fetching water	2	2
Breast feeding	1	1

By observation and timing, it was however noted that *comforting the child* was the most time-consuming activity for both the mother and alternative caregiver. This activity took on average 76 minutes for most caregivers (table 5.14). The other childcare activities that also took a lot of the mothers' time were *breastfeeding (53 minutes) and fetching water, (47 minutes)*. *Feeding children on solid food and fetching fuel* took the least time, less than 20 minutes.

TABLE 5.14: DISTRIBUTION OF OBSERVED CHILDCARE ACTIVITIES BY MEAN TIME PER DAY

OBSERVED TIMED CHILD CARE ACTIVITY (N=50)	MEAN TIME PER DAY (MINUTES)
Comforting child	76 (48)
Breast feeding	53 (29)
Fetching water	47 (38)
Care of child's clothes	41 (33)
Feeding child on liquid food	41 (22)
Food preparation for child	38 (20)
Care of child's body	27 (16)
Looking for food	27 (27)
Feed child on solid food	12 (15)
Looking for fuel	7 (10)

The figures in parentheses are standard deviations.
N = Total number of households observed.

Table 5.15 shows the distribution of mean childcare time per activity per day by activity and child's age. As expected, *comforting the child, breastfeeding, care of child's body and care of child's clothes* took significantly more time during the first five months of a child's life, after which the time reduced with increase in age. There was a weak negative correlation, between time spent on these activities and the child's age, and the relationship was significant at $p<.05$ (see table 5.15 for actual p-values). Thus though breastfeeding was reported by only one mother, it is important to note that on observation, this activity took as much time as *comforting the child,* and even more than *feeding the child* which more mothers had reported as time- consuming.

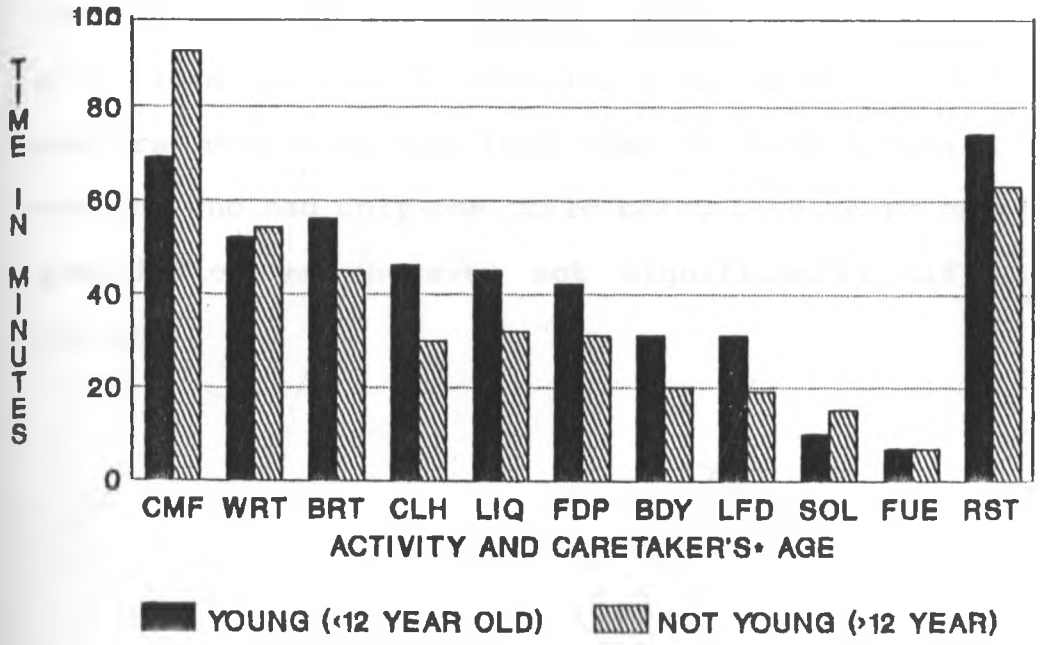
TABLE 5.15 DISTRIBUTION OF MEAN CHILDCARE TIME PER ACTIVITY PER DAY BY ACTIVITY AND CHILD'S AGE

ACTIVITY	MEAN TIME IN MINUTES PER DAY FOR AGE: 0-5 (n=15)	6-12 (n=16)	13-24 (n=19)	CORRELATION VALUE	P-VALUE
Comforting child	100	78	56	-.3328	.009*
Fetching water	42	40	56	.1910	.092
Breast feeding	67	57	37	-.4241	.001*
Care of child's clothes	48	47	30	-.2548	.037*
Feed child on liquid	30	48	44	.1239	.196
Food preparation	29	44	41	.1101	.223
Care of child's body	38	27	19	-.3769	.003*
Looking for food	17	40	23	-.0971	.251
Feed child on solid food	1	8	23	.6082	.000*
Looking for fuel	9	7	5	-.1262	.191

* *Significant difference at P<0.05*

Figure 5.1 shows the distribution of mean childcare time by activity and alternative caregivers' age. Households with young alternative caregivers (below 12 years old), had more time spent in breastfeeding, *care of child's clothes, feeding child on liquid food, food preparation, care of child's body and looking for food*. Of these activities, those that significantly correlated (weak and negative) with the caregiver's age were *food preparation for the child* ($r=-0.235$, $p=0.05$), *feeding child on liquid food* ($r=-0.264$, $p=0.032$) and *care of child's body* ($r=-0.242$, $p=0.045$).

FIG. 5.1 DISTRIBUTION OF MEAN CHILDCARE TIME BY ACTIVITY AND CARETAKER'S** AGE



** MOTHER SUBSTITUTE

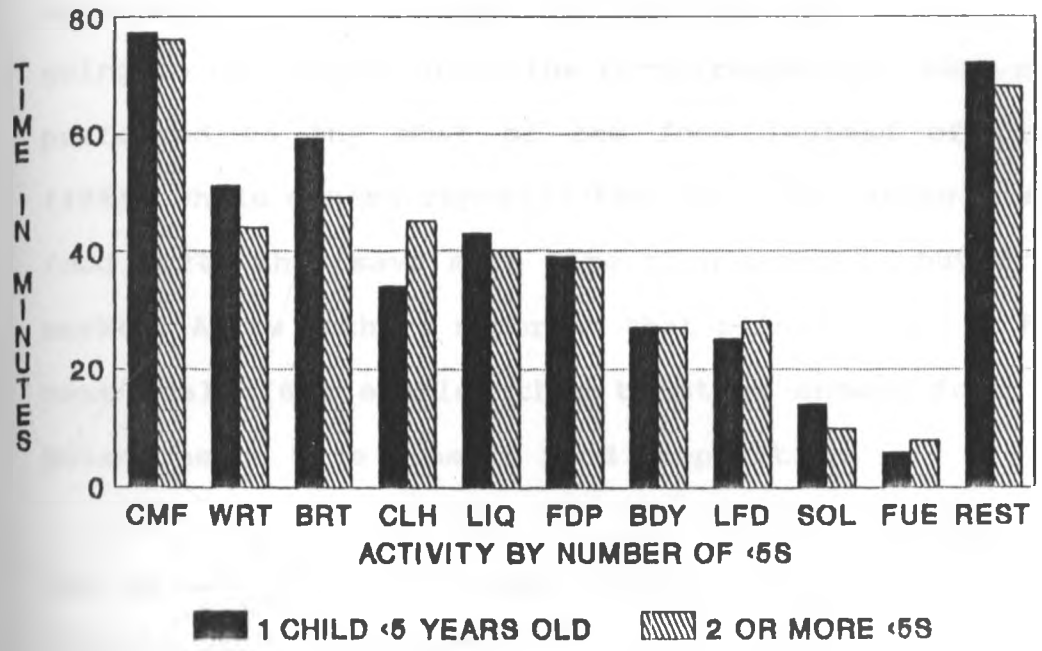
KEY:

CMF	Comforting child
RST	Caregiver/mother resting
WRT	Fetching water
BRT	Breastfeeding
CLH	Care of child's clothes
LIQ	Feeding child on liquid foods
FDP	Food preparation for child
BDY	Care of child's body
LFD	Looking for food
SOL	Feeding child on solid foods
FUE	Looking for fuel
*	Correlation statistic, (r), significant at $p<0.05$

Figure 5.2 shows the relationship between time spent on childcare activities and the number of children below five years of age in a household. Where there were more than one child below five years of age, more time was spent on care of child's clothes, looking for food and fetching fuel. The mothers here also had less time to rest compared to the mothers who had only one child below five years of age. The association was however not significantly different at $p<0.05$.

FIG.5.2 DISTRIBUTION OF MEAN CHILDCARE TIME BY ACTIVITY AND NUMBER OF <5S

61



KEY:

CMF	Comforting the child
RST	Caregiver/mother resting
WRT	Fetching water
BRT	Breastfeeding
CLH	Care of child's clothes
LIQ	Feeding child on liquid foods
FDP	Food preparation for child
BDY	Care of child's body
LFD	Looking for food
SOL	Feeding child on solid food
FUE	Looking for fuel

5.5 TIME SAVING METHODS IN CHILD CARE:

Different methods of saving time for varying activities are shown in table 5.16 as reported by the study mothers.

In looking for food, for example, most mothers (63%) reported *stocking enough food* in the house so as to avoid going to the market or to the farm frequently. Some mothers preferred to *buy most of the food* instead of planting (49%), while others reported that by *cultivating their own food* (22%) they save more time than going to buy from the market. A few mothers reported that *planning early* for the next meals (6%) enables them to stock enough food in the house, hence save time in food preparation.

The majority of the study mothers (77%), save time in fetching fuel by *fetching a lot* to be used for at least a week or buying charcoal (22%), while a few mothers, (3%) reported collecting firewood on a daily basis, just enough for a meal.

Fetching large amounts of water on wheelbarrows or donkeys (39%) and *use of large storage containers* (28%) were the most reported ways of saving time in fetching water. Some mothers, however, saved time by drawing water when communal taps are less congested (10%). Others dovetailed (8%), by combining drawing water for use in the house with washing

clothes at the water source, or buying food or getting it from the farm while going to fetch water.

In food preparation, most study mothers save time by either *having plenty of good quality firewood* (63%), *cooking several dishes at the same time* by using different fireplaces (52%) or *having all items ready before starting* to cook. Some of the mothers, however, preferred to save time in food preparation by *cooking a lot of food* enough for several meals (3%) so that they do not keep on lighting the fire.

Soaking clothes before washing was the method most frequently used by study mothers (35%) to save time while washing children's clothes. Washing clothes at home to dovetail (29%) or washing at water source (28%), were also commonly reported time saving methods in care of children's clothes.

TABLE 5.16: DISTRIBUTION OF REPORTED TIME SAVING METHODS FOR SELECTED CHILDCARE ACTIVITIES BY HOUSEHOLDS

ACTIVITY	TIME SAVING METHODS N=120	%
LOOKING FOR FOOD	1. Stock enough food in the house	63
	2. Buy most food instead of planting	49
	3. Cultivate own food	22
	4. Plan early for next meal	6
	5. Send someone to do it	3
FETCHING FUEL	1. Fetch a lot to last for a week	77
	2. Buy charcoal/paraffin	22
	3. Get from nearest source	8
	4. Send child to fetch	5
	5. Get just enough for a meal	3
FETCHING WATER	1. Get a lot with wheelbarrow/donkey	39
	2. Have big storage containers	28
	3. Go when common tap has few people	10
	4. Rash to and from water source	9
	5. Use nearest less hygienic water for most cleaning work	8
	6. Dovetail (perform >1 activity)	8
	7. Store rain water,	3
FOOD PREPARATION AND COOKING	1. Have good firewood ready	63
	2. Have more than one cooking place	52
	3. Have all items ready before cooking	18
	4. Dovetail (perform >1 activity)	9
	5. Cook just enough for a meal	4
	6. Cook for more than a meal	3
	7. Cover foods while cooking	3
CARE OF CHILD'S CLOTHES	1. Soak before washing	35
	2. Wash at home to dovetail	29
	3. Wash at water source	28
	4. Sort out the very dirty clothes	25
	5. Avoid accumulating dirty clothes	24
	6. Wake up early and wash	6
	7. Use more than one wash basin	5

5.6 NUTRITIONAL STATUS OF THE STUDY CHILDREN.

The prevalence of child malnutrition in the study area was as shown in table 5.17. Out of the 120 children studied, 28% were underweight, 27% were stunted and 4% were wasted.

TABLE 5.17 DISTRIBUTION OF CHILD NUTRITIONAL STATUS BY NUTRITIONAL INDICATOR

NUTRITIONAL INDICATOR	MALNOURISHED % N=120	NORMAL %
Weight-for-age (WAZ)	28	72
Height-for-age (HAZ)	27	73
Weight-for-height (WHZ)	4	96

Table 5.18 shows the distribution of malnourished children by sex. More boys were malnourished than girls according to the weight-for-age and height-for-age nutritional indicators. These differences were statiatically significant for WAZ and HAZ at $p<0.05$ (WAZ: $X^2 = 4.48$, $P=0.03$; HAZ: $X^2 = 6.4$, $P=0.01$).

TABLE 5.18 DISTRIBUTION OF MALNOURISHED CHILDREN BY SEX

NUTRITIONAL INDICATOR	% MALNOURISHED BOYS (n=54)	GIRLS (n=66)	P-VALUE
Weight-for-age (WAZ)	38.9	9.7	0.03*
Height-for-age (HAZ)	38.9	16.7	0.01*
Weight-for-height (WHZ)	3.7	4.5	1.00

* *Significant difference at P<0.05*

Table 5.19 shows the distribution of malnourished children by age. The older children (6-24 months), are significantly more underweight (X^2=6.50, P=0.01) and stunted than the younger children who were probably still getting adequate nutrients from the breast milk.

TABLE 5.19 DISTRIBUTION OF MALNOURISHED CHILDREN BY AGE

NUTRITIONAL INDICATOR	% MALNOURISHED 0-5 (n=33)	6-24 (n=87)	P-VALUE
Weight-for-age (WAZ)	9	35	0.01*
Height-for-age (HAZ)	12	32	0.06
Weight-for-height (WHZ)	3	4	1.00

* *Significant difference at p<0.05.*

Table 5.20 shows that 70% of the study children were normal. However, the proportion of children who were stunted only was higher, 26.0%, than that of children who were wasted alone, 3.3%, or those who were both wasted and stunted, 0.8%.

TABLE 5.20 DISTRIBUTION OF STUDY CHILDREN BY NUTRITIONAL STATUS N=120

NUTRITIONAL SITUATION	n	PERCENT
Normal	84	70.0
Stunted only	31	26.0
Wasted only	4	3.3
Wasted and Stunted	1	0.8

WHZ - Weight-for-height Z-scores
HAZ - Height-for-age Z-scores

Table 5.21 shows the distribution of malnourished children by selected maternal characteristics. The literate mothers with at least 5 years in primary education had significantly more underweight children (68%) than the illiterate ones. This difference was however not statistically significant ($p<0.05$).

The only significant difference found was between wasting and maternal occupation at $p<0.05$ (using Fisher's Exact Test $p=0.03$). Children of business women were significantly more wasted (60%) than for the farmers.

TABLE 5.21 DISTRIBUTION OF MALNOURISHED CHILDREN BY SELECTED MATERNAL CHARACTERISTICS

MATERNAL CHARACTERISTICS	MALNOURISHED CHILDREN					
	Underweight n=34		Stunted n=32		Wasted n=5	
	%	p-value	%	p-value	%	p-value
MATERNAL AGE (YEARS)						
Below 30	60	0.30	56	0.07	40	0.15+
30 years and above	40		44		60	
MATERNAL EDUCATION						
At least 5 years in primary	68	1.00	44	1.00	40	0.41+
No education	32		56		60	
MARITAL STATUS						
Married	97	0.85	100	0.14+	100	0.77+
Single	3		-		-	
MATERNAL OCCUPATION						
Farmer	74	0.17	75	0.30	40	0.03*+
Business	26		25		60	

n is the number of malnourished children
* significant difference at $p < 0.05$ with Fisher's Exact Test
+ Fisher's Exact test used

Generally, a high proportion of malnourished children was found in households which ranked most childcare activities in the 1st three positions (table 5.22). There was however no significant difference in the prevalence of malnutrition between children from households that ranked childcare activities high and those that ranked the activities low at $p<0.05$.

TABLE 5.22 DISTRIBUTION OF CHILDCARE ACTIVITIES

BY PROPORTION OF MALNOURISHED CHILDREN

CHILDCARE ACTIVITY	n	% OF MALNOURISHED CHILDREN Underweight	Stunted	Wasted
Fetching firewood	2	50.0	100	100
Fetching water	6	33.3	33.3	-
Cooking for child	100	32.0	29.0	5.0
Care of child's body	85	28.2	27.0	5.8
Care of child's clothes	86	28.0	24.4	3.4
Feeding child	62	27.4	25.8	3.2
Looking for food	6	-	-	-
Comforting child	4	-	-	-
Breastfeeding	1	-	-	-

n = households which ranked childcare activities in the 1st three positions (Table 5.10).
No significant difference observed at p<0.05

Table 5.23 shows that there was a negative, weak and non-significant, ($p<0.05$), relationship between the child's nutritional status and time spent on looking for food, cooking for the child and feeding the child. For the malnourished children, caregivers spent more time on these three activities, probably because the children were also sick, hence they needed extra attention that required more time than for the normal children. The time spent on the rest of the activities however, positively correlated with the child's nutritional status, and the relationships were also weak and non-significant at $p<0.05$.

TABLE 5.23 CORRELATION OF TIME SPENT ON CHILDCARE ACTIVITIES WITH NUTRITIONAL STATUS OF THE CHILD

CHILDCARE ACTIVITY	WAZ		HAZ		WHZ	
	r	p	r	p	r	p
Comforting child	.002	.494	.029	.421	-.086	.276
Fetching water	.172	.116	.102	.239	.124	.196
Breastfeeding	.059	.341	.114	.214	.051	.361
Care of child's clothes	.235	.050*	.215	.066	.146	.155
Feed child on liquid food	-.050	.365	-.124	.196	-.228	.055
Cooking for child	-.177	.108	-.173	.114	-.033	.408
Care of child's body	.166	.108	.046	.375	.154	.142
Looking for food	-.001	.497	-.059	.342	.145	.157
Feed child on solid food	-.159	.134	-.032	.411	.000	.499
Fetching fuel	.185	.099	.142	.161	.029	.421

WAZ - Weight-for-age Z-score
HAZ - Height-for-age Z-score
WHZ - Weight-for-height Z-score

n (number of observed households) = 50
** significantly different at 0.05*
r is the correlation coefficient

5.7 FOCUS GROUP DISCUSSION

A focus group discussion with mothers of children aged below 2 years of age was conducted to verify data collected by questionnaire method. Most of the participants agreed that it is important for mothers to devote their time to the care of their young children because the child has to grow and survive, yet is still helpless and cannot meet his own basic needs in life. Among the childcare activities reported by the majority in the group were: cooking and feeding the child, washing child, washing child's clothes, and seeking for medical help when necessary. Only a few of the group members mentioned holding and carrying the child as an important childcare activity. The rest of the mothers argued that they performed it while relaxing hence it was not an activity that they must perform themselves. The alternative caregiver, an older sibling in most cases, was responsible for holding the child while the mother took care of other tasks in the home.

According to most participants, for a child who is normal, the age that is most time-demanding for mothers is before the age of one year. During this period, the child is mainly dependent on the caregiver since he cannot walk, play on his own or feed on food from family pot. The

caregivers therefore have to spend more time on childcare activities at this stage than at any other stage in life.

None of the participants mentioned that she ever gets enough time to complete her childcare activities. According to them, childcare activity is not the only work for mothers. There is farmwork, feeding the family, care of livestock, going to the market, and so forth. To the majority in the group, the list of maternal work is endless, and one can hardly get enough time to complete all the work in a day.

The childcare activities that they reported take most of their time are cooking and feeding the child and washing child's clothes. These activities take more time because water is needed, and in the case of cooking, food to be cooked and good firewood are also required. Some of the participants therefore agreed that fetching firewood and water, and looking for food are also important childcare activities.

Most mothers mentioned that since they cannot perform all the activities well, 'shortcuts' are usually taken in order to save time. All the participants agreed that fetching a lot of water and firewood and stocking in the house is the only way to save time. Other members mentioned that

children could be sent to perform such activities so as to save time, while a few mothers mentioned that they normally pay someone to haul water for them with a donkey or wheelbarrow. Each mother in the focus group had, however, her own ways of saving time in various childcare activities.

The above findings of the focus group discussion were similar to the information that had been collected through interview method, hence this discussion verified that the data collected by questionnaire on maternal and childcare activities, as well as time-saving methods in child care was correct.

CHAPTER 6

DISCUSSION

6.1 MATERNAL CHARACTERISTICS

The study mothers were young, 20-29 years of age. This age range was expected because only mothers with children aged two years and below were included in the study. Age-Specific Fertility rates have been found to be highest within the age range of 20-29 years in most parts of the world (Rindfuss and Parnell, 1989; NCPD, 1989; Kenya, 1980). It is therefore possible that most mothers in the current study had their young children within this age range, hence they were the majority in the study population resulting in no significant difference in childcare and child nutrition with maternal age.

The proportion of the study mothers without education was small (15.8%). This is probably because of the improvement in the level of female education that has been observed in Kenya. According to the 1979 Population Census Report (Kenya, 1981), there were only 39.5% females in the age range 20-24 years, without education in 1979 compared to 61.1% observed in 1969. Furthermore, Integrated Rural Survey Report (Kenya, 1982), reported that the least proportion (36.4%) of females without education in Nyanza Province were in the age group 20-29 years. Thus, most of

the study women, (83.3%), were literate, having had at least 5 years of primary school education. Education of the mother often explains more variance in childcare and child nutrition than even income, (Unicef, 1992). In this study, childcare and child nutrition did not significantly vary with maternal education since only a few, (15.8%), of the mothers had no education.

The study identified most of the mothers as married, performing their daily activities in their own households. The few, (2.5%), single mothers who were mainly dependent on their parents, were not included in the observation sample since most of the activities were performed by their mothers. It was also noted that the prevalence of polygamy was high, (28%), in the study area. This is in line with other studies that have been carried out on the prevalence of polygamy in Kenya. The Kenya Fertility Survey, 1977-1978 (Kenya, 1980), for example, recorded a prevalence of 22% for women in age range 20-24 years, and 28% for women in age range 25-29 years in Kenya. Nyanza Province, where the current study was carried out, had been reported to be having the highest, proportion (37%), of women in polygamous marriages, (NCPD, 1989). Thus it was not surprising to find a high rate of polygamy in the study population. Both childcare and child nutrition did not however vary with polygamy in this study.

This being a rural setting, most of the families survive on subsistence farming. This is in line with what has been reported that agriculture is the main source of income for the majority in rural parts of Kenya (Kenya, 1982; Kenya, 1989). However, low rainfall and poor soils, coupled with fragmented pieces of land, discourage cash cropping and intensive food cropping. This explains why rope-making and basket-weaving were the main source of income for most women in the study area, hence the majority of the study women were at home with their children most of the time. The above observation shows that the study population was a rural one that mainly depended on subsistence farming for its survival.

6.2 MATERNAL ACTIVITIES

The study mothers had almost similar maternal characteristics (section 5.1), and they performed almost similar activities among which were, family food preparation, childcare activities, farmwork, fetching water and firewood and even income earning activities (section 5.2). The focus group discussion (section 5.7) also showed that these are the maternal activities in the study area. The list of maternal activities is however endless according to the focus group discussion. Similar maternal activities in rural areas have also been reported by other

studies (Zeidenstein, 1979; Basse, 1984; CRSP, 1987; and Leslie, 1988).

Unicef (1992) and FAO/WHO (1992) both state that mothers may not report some of the activities they perform since they do not consider them as work. Similar findings have been found in this study where even important childcare activities like breastfeeding were not reported during the interview as well as in the focus group discussion, yet they were observed as activities carried out by the study mothers (section 5.2). The explanation for this under-reporting of maternal activities may be probably because what the mother considered to be an activity was mainly what consumed most of her energy. This is reinforced by the focus group discussion where mothers said that holding the child can be counted as leisure. The researcher, however, took all activities performed by the caregivers that required their time and energy. In so doing, it was possible to observe important caregiving activities and note the time they took to be performed. Hence, from this study, observation supersedes reporting where studies on maternal activities are concerned. Similar findings by McSweeney (1979) have been reported by Johnson (1983) where rural women failed to report 44% of the work they perform. It was also possible to note here that some activities took

very little time to be performed, for example, breastfeeding.

Although the study mothers from different households performed similar activities throughout the day, both at home and outside the home, breastfeeding and feeding the child on solid foods were found to depend on the child's age (section 5.2) where mothers with younger children were found to breastfeed significantly more than those mothers with older children. It was only the performance of these two activities related to feeding the child that varied with the age of the child. This is not surprising because as the child grows, it becomes more independent and releases the mother to perform other activities in the home. Similar findings have been reported by the Kilifi Mijikenda study in Kenya, (Neimeijer and Peters, 1987), where mother's radius of action widened as the child grew older and began to feed on a variety of food.

6.3 CHILDCARE ACTIVITIES

In this study, although the study mothers reported their activities, (section 5.2), it was interesting to note which among them were classified as childcare activities (section 5.3). Like in the Embu study, (Paolisso, et.al., 1989), *holding, feeding, breastfeeding, washing, dressing, and*

treatment of illness were considered as childcare activities. Myers (1992), however, included activities that were not mentioned in the current study, for example, supervising a child's toilet, interacting with and stimulating a child, playing and socializing a child to its culture, sheltering and nurturing and showing affection to the child. The study mothers however did consider *cooking for the child, care of child's clothes, and care of child's body* as important childcare activities. These have been described as enhancement childcare activities, (FAO/WHO, 1992), since they are intended to enhance growth and further development.

In the current study, childcare activities were found to be falling under two main categories: direct childcare activities and enabling factors. It is not however clear whether there are studies that have categorized childcare activities the same way they have been categorized in this study. Nonetheless, the direct childcare activities in this study are those that were found to be directly related to the child's health and nutritional needs. These included *cooking and feeding the child, care of child's clothes, care of child's body, preventing and attending to sickness,* and any other activity that directly relates to the child's health and nutrition. The enabling factors on the other hand were those childcare activities that were necessary in

order for the direct childcare activities to be performed. Examples of those enabling factors in this study were *fetching water, fetching firewood, income-earning activities and looking for food.*

Most study mothers ranked most of the direct childcare activities as important, in the first three positions (section 5.3). There was however no significant difference in maternal ranking of these activities with maternal characteristics, probably due to the homogeneity of the study population in terms of maternal characteristics (section 5.3).

The observed difference in the maternal ranking of *feeding the child on liquid or solid food* with availability of alternative primary caregiver (section 5.3) could be attributed to the youthfulness of the alternative child caregiver. Most, (84%), of the alternative primary child caregivers were below 12 years of age, and could hardly feed the child properly. The mothers were therefore keen on feeding the child before leaving it under the care of the young caregiver, hence this activity was ranked high by the (52%) of the study mothers. Leaving the infant under the care of such young caretakers is risky since the infants may not be effectively fed till the mother comes back. Similar findings on the youthfulness of the alternative

child care-providers have also been reported by Joekes (1989).

Very few study mothers reported fetching water and firewood, which are mainly enabling factors, as childcare activities (section 5.3). Furthermore, these activities were not important since they were not ranked high as important childcare activities by the study mothers (section 5.3). Once again, some of the mother's failure to mention, and even to rank high, these enabling factors as important childcare activities could be explained by individual differences in the understanding of the meaning of caregiving behaviours (Unicef, 1992). Although this study categorized these enabling factors as childcare activities, most studies on childcare activities have not tried to do so. The Embu study, (CRSP, 1987), for example, included fetching water and fuel among the housework, not childcare activities. These enabling factors are, however, important in that without them, direct activities cannot be performed unless there is a substitute. For instance, without water or firewood, the child's food cannot be prepared, hence the child cannot be fed on supplementary food unless the mother buys ready to eat food that do not need cooking. Thus there has to be a system to ensure that the child's food is ready, and the child is kept clean and

free from germs, hence the need to include fetching firewood and water among important childcare activities.

6.4 MOST TIME-CONSUMING CHILDCARE ACTIVITIES

Care of child's clothes was reported as the most time-consuming activity, because of the total time and energy required to get the water and wash the clothes. Water was mainly collected from communal water points and most mothers reported that they wasted a lot of time on the queue while waiting for their turn to draw water. This problem of drawing water, combined with lack of good firewood could account for the reason why cooking for the child was also reported to be time-consuming. The tree branches, which is the preferred type of firewood, (Kenya, 1988), is not easy to get within the study community, and usually women and girls have to travel long distances to the forested areas along the Kericho District boarder to get it. Observational results did not however indicate that the above reported activities were most time-consuming.

Comforting the child was the activity that took the longest time to be accomplished by observation. This is consistent with the findings reported by Paolisso et.al. (1989) in Embu, Kenya where holding the child was the major component of the total care provided by a mother for her infant. In

this study, the observed mothers and alternative primary child-caretakers spent much of their childcare time either holding the child on their laps or carrying it on their backs. Surprisingly, this activity was least considered as an important childcare activity as indicated by the results of both the interview (section 5.3) and focus group discussion (section 5.7). Unicef (1992) also reports that comforting the child is considered leisure, and not an activity by most caregivers. Thus from this study findings, the researcher's views and most of the mothers' views of what is an activity were not the same. Whereas the researcher viewed comforting the child as an activity since it was consuming the caregivers' time and energy, most mothers considered it as leisure since it is usually the alternative caretakers who hold the child while the mother is performing other tasks in the home as shown in the result of the focus group discussion. The importance of holding the child has been reported to vary by developmental period. During infancy, comforting the child is important for physical and psychological development, but in toddlerhood, a child who is frequently held is often more poorly nourished, or shows lower levels of verbal development than more active children, (Unicef, 1992).

The average breastfeeding time observed in this study was (53 minutes) consistent with that observed in Ghana (50

minutes), Northern Cameroon (56 minutes) and among the poor mothers in Philippines (69 minutes). It does not however agree with that of the Philippine (90 minutes) and in another study among the rich mothers in Philippine (116 minutes) (Leslie, 1988) which reported significantly more time for breastfeeding than is observed in the current study. The mothers in this study were from a rural community who mainly depended on subsistence farming as their main source of income, with few if any, income-earning activities (section 5.1). These mothers were therefore generally poor, and from the above results, it appears that poor mothers spend less time breastfeeding than the rich mothers.

Looking for fuel as an activity recorded very short time (7 minutes per day), partly because of the presence of the researcher which might have made mothers or alternative caretakers fetch whatever type of firewood they could get from nearby. Otherwise, women usually travel far to get enough, good firewood to last them several days. This explains why these results do not agree with those of other studies that have attempted to look at time spent on firewood collection. For instance, the Kisii study (Kenya, 1988), found a range of 45 to 90 minutes while the Malawi study (Brouwer,1992) found an average of 8 hours per week for firewood collection.

Time spent on *comforting the child, breastfeeding, care of child's body and care of child's clothes* decreased significantly as the child becomes older (table 5.15). These results agree with Werner's view reported in Unicef (1992) that in most cultures, mothers devote considerable time to the infant, particularly in the first six to nine months of a child's life. These findings also support those of the Embu study (CRSP, 1987) where decline in percentage of physical care and carrying the child with increase in child's age were both significantly different at $p<0.001$. Thus, these findings indicate that mothers spend significantly more time in the care of the younger children than for older children.

It was also noted in this study that very little time was spent on *feeding children on solid foods*, 8 minutes for children aged 6-12 months, and 23 minutes for those aged 13-24 months. It is recommended that the child be introduced to solid foods in addition to breastmilk from 4-6 months of age (WHO, 1986). Although the mean weaning age was 4.2 months (std=2.1), the children were mainly fed on the liquids, for instance, porridge, which recorded more time, 48 minutes and 44 minutes for the above ages respectively. The small amount of time spent on feeding children on solid foods reflects a very low feeding frequency and quantities offered to the children. This

could have been one of the contributing factors to the poor nutritional status observed among the older children (6-24 months). In this study, it was also found that the younger the alternative caregiver, the more time the household spent on *food preparation for the child, feeding the child and care of the child's body*. This could be probably because, apart from the caregiver being too young to cope with the work involved in taking care of their younger sibling, she also lacks knowledge of time-saving methods that could enable her complete the task faster. In this study, the youngest primary alternative caregiver was 3 years old, and Unicef (1992) also reports that children at age 3 or 4 are not really cared for, but are caregivers themselves. However, Myers (1992) says that sibling care often occurs when a mother or other adult is nearby so that emergencies could be handled.

6.5 TIME-SAVING METHODS IN CHILDCARE

As reported by Leslie (1988), sometimes it can be very difficult, especially for the low-income rural women to cope with many activities that compete for their time and energy, with few, if any, labour-saving technologies to help. However, mothers are reported to take 'shortcuts' when faced with such situations (Basse, 1984). In the current study, different time saving methods (shortcuts), were reported for varying activities (section 5.5). Focus

group discussion result also indicated that mothers are usually forced to take many 'shortcut' in order for them to complete their daily activities. The methods mentioned were mainly simple, requiring less application of time-saving and labour-intensive equipments. This study did not, however, seek the information on whether the women use the methods they had reported more frequently and effectively. Some of the time-saving methods or 'shortcuts' that mothers reported in this study could however, be detrimental to the child's health and nutritional status. For example, *cooking food for more than one meal,* as a way of saving time in cooking for the child, could lead to feeding the child on cold or microbially contaminated foods and eventually lead to food-borne infections. Similar findings have also been reported by Basse (1984).

It is interesting to note from this study findings that none of the study mothers mentioned ways of saving time in *comforting the child,* an activity which took most of their childcare time. The more time spent by mothers on this activity may be possibly due to the fact that they do not consider *comforting the child* as work,as has been discussed earlier, hence the need to save time for it.

6.6 NUTRITIONAL STATUS OF THE STUDY CHILDREN

Kisumu District is one of the districts in Kenya with high prevalence of malnutrition. Results of the Fourth Rural Child Nutrition Survey (Kenya, 1991) indicate stunting and wasting rates of 38% and 6.3% respectively in children aged five years and below. The results of this study show similar rates since the prevalence of stunting was 27% among the under two-year old children, and that of wasting was 4% for the same age group of children. The Fourth Rural Child Nutrition Survey also reported high prevalence of wasting in the age-group 6-11 months (14.5%), while stunting was found in all age-groups and increased with increase in age of the child. Results of this study also reveal high prevalence of wasting for children especially in age-group 6-12 months (section 5.6), though wasting did not vary significantly with the child's age. The older children were, however, significantly more underweight than the younger children. The high prevalence of wasting and underweight were expected in the study area since there had been food shortage in the area just before and even during the study period. The male children seemed more affected by the food shortage in the study area, since they were more significantly underweight and stunted than the females (section 5.6). Similar findings in Kenya have been reported by Walingo (1991) and the Third Nutrition survey (Kenya, 1979). It may be possible that since boys are more active

than girls, as reported by Suiter and Crowley (1984), their protein is used for energy rather than for tissue building. Since protein and energy are not adequately provided by the diet, boys loose a lot of weight. The rate of growth is also reduced, hence the observed high prevalence of stunting among male children in the study community.

An analysis of child's nutritional status by maternal characteristics did not reveal much significant variations except for wasting and maternal occupation. Children of mothers who were involved in business were significantly more wasted than the rest of the children (table 5.20). Two major effects of women's work on child nutritional status have been hypothesized to be positive income effect and negative time effect (Leslie, 1989). The mothers in the current study might have not been getting enough income from their business to enable them to buy nutritionally rich breastmilk substitutes and solid foods for their children. Given that these mothers are also not at home most of the time during the day, the time for breastfeeding and even cooking and feeding the children is reduced. Children of business women could have also had higher morbidity experiences than for the non-business women. It could also be possible that women who are involved in business breastfeed less frequently than the subsistence

farmers who spend more time with their children thus breastfeeding more frequently and longer (O'Gara, 1989). Hence, more wasting was observed among children of business mothers than among the non-business women.

Although this study revealed a weak and non-significant relationship ($p<0.05$), between childcare time and nutritional status of the children, this relationship could be of practical significance. Time for looking for food, cooking for the child, and feeding the child negatively correlated with the child's nutritional status indicating that caregivers spent more time on these activities for the malnourished children than for the normal children. It is possible that the malnourished children were also ill hence the mothers had to spend extra time on their care. This is in line with what Unicef (1992) reports that children who are ill usually receive additional care. If a mother of an already malnourished child cannot spend extra time to prepare good food and feed the child, the child may become more malnourished. No wonder, Zeitlin et.al. (1990) reports that active role in feeding the child, frequent physical contact with the child and showing affection to the child have been associated with better nutritional status of one and two year old children. Thus

maldistribution of maternal time may lead to poor childcare which in turn leads to malnutrition through the child's dietary intake and health status. Similar feelings have also been expressed by FAO/WHO (1992).

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSIONS

There are two main categories of childcare activities in the study community: the direct activities and the enabling factors. The most important childcare activities to the mothers are the direct childcare activities, namely: *cooking for the child, care of child's clothes, care of child's body and feeding the child*. Generally, the enabling factors, and even some direct activities like breastfeeding and *comforting the child* are not important childcare activities as far as the study mothers are concerned.

The amount of time spent on an activity does not determine its importance to the mothers. *Comforting the child* and breastfeeding are the two most time-consuming childcare activities yet least prioritised by mothers in this study. Time allocation for childcare activities mainly depends on the age of the child and that of the alternative primary caregiver. The younger the child, the more time caregivers spend on most childcare activities. Similarly, the younger the alternative caregiver, the more time caregivers spend on childcare activities since the mothers cannot rely on the young caregivers to perform most of the activities for her.

When short of time, mothers apply time saving strategies, some of which are likely to be detrimental to the child's health and nutritional status. For example, *cooking food for more than one meal* and *use of less hygienic source of water*.

There is high prevalence of child malnutrition in the study area. The older children are more significantly underweight and are prone to stunting at any age. The male children are most affected. Children of business women were also more wasted than those of subsistence farmers.

There is no significant relationship between time spent on childcare activities and the nutritional status of the children, hence, the child's nutritional status does not depend only on the care the child receives, but on other factors as well.

7.2 RECOMMENDATIONS

Based on the findings and observations of this study, the following recommendations are suggested:

1. There is need for programmes of parental support and education, that will include discussions of nutritional and other childrearing information. Such programmes would be probably more effective if they can address the issue of important childcare behaviours and how caregivers can distribute their time fairly among these childcare activities. These programmes can be incorporated in the already existing health and nutritional programmes to help contribute towards improving childrearing practices at household level.

2. The dissemination of information on the effect of childrearing practices, especially breastfeeding should be more intensified for rural mothers. This could be possible not only through the health clinics as is usually the case, but also through the help of community health workers, organised seminars at village levels, women group meetings and during adult literacy classes.

3. There is need for organised community programmes of childcare, in which the responsibility for care is at least

temporarily given to mature and responsible alternative caregivers, not the three or four year old children.

4. In order to reduce time spent on other maternal activities and childcare, appropriate technology projects and programmes should pay more attention to appropriate childrearing technologies. The time-saving methods reported by the study mothers, for instance, using a wheelbarrow or donkey to fetch a lot of water, dovetailing and planning early for the next meal should be incorporated in such projects and programmes. The mother's time-saving methods that may have adverse effects on the child's health and nutritional status should however be discouraged and alternative methods suggested or developed for them. These alternative methods should, however, be more relevant for rural mothers who cannot afford the expensive time-saving equipments that are available in the market today.

5. To be able to get a clearer picture of the relationship between childcare and nutritional status of the child in the study community, a case-control study using normal and malnourished children over a period of time is recommended.

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APPENDICES

APPENDIX 1: MEAN AND TOTAL TIME FOR COMPLETED TIMED CHILDCARE ACTIVITIES*

ACTIVITY	MEAN TIME	Std Dev	SUM	N
Play[C]	91.97	72.85	2759.00	30
Sleep[C]	56.08	58.70	673.00	12
Comforting child	73.82	55.95	2067.00	28
Caretaker Resting[M]	66.05	43.84	2642.00	40
Breast feeding	53.16	29.26	2605.00	49
Fetching Water	47.81	41.77	2056.00	41
Care of child's clothes	41.74	34.34	1795.00	43
Feeding child on liquid	40.82	22.70	2000.00	49
Food preparation	37.46	20.53	1461.00	39
Care of child's body	27.92	16.56	1368.00	49
Looking for food	28.91	28.07	1330.00	46
Feeding child on solid	12.10	15.24	593.00	49
Looking for fuel	6.32	10.28	259.00	30

** Incomplete timed activities excluded.*

C, M, Timed Child and maternal activity, NOT childcare activity

APPENDIX 2:

DATA COLLECTION TOOLS

PHASE ONE PART ONE: **QUESTIONNAIRE**

UNIVERSITY OF NAIROBI

UNIT OF APPLIED HUMAN NUTRITION

KABETE CAMPUS

CHILD CARE PRACTICES AND TIME ALLOCATION STUDY IN NYAKACH. OCTOBER 1992 - JANUARY 1993

INSTRUCTIONS:

1. THE RESPONDENT THROUGHOUT THE QUESTIONNAIRE MUST BE THE MOTHER OF A CHILD WHO IS TWO YEARS OLD AND BELOW.

2. FOR QUESTIONS WITH ALTERNATIVES, INDICATE THE NUMBER CORRESPONDING TO THE CORRECT ANSWER IN THE [ ] GIVEN.

BASELINE INFORMATION

1. Name of interviewer
2. Date of interview
3. Village
4. household number
5. Head of household
6. Name of mother
7. Age (in year) of mother (indicate the correct one
   1. Below 20
   2. 20 - 29
   3. 30 - 39 [ ]
   4. Above 40

8. Marital status of mother (indicate the correct one)
   1. Single
   2. Married
   3. Widow [ ]
   4. Divorced
   5. Separated

9. Type of family
   1. Monogamous
   2. Polygamous [ ]

10. Mother's level of education (indicate the correct one)
    1. Did not go to school
    2. Class 1-4
    3. Class 5-8 [ ]
    4. Secondary
    5. Post secondary

11. Occupation of mother
    1. Professional
    2. Subsistence farmer
    3. Small scale business\shopkeeper
    4. Others (specify) [ ]

12. Religion of the mother
    1. Catholic
    2. S.D.A [ ]
    3. Protestant (cpk, a.I.C., P.A.G.
       (Indicate sect)

13. Number of people in the household .....

14. Number of children less than five years old in the household
    1. One
    2. Two
    3. Three [ ]
    4. More than three

15. Name of index child .....
    (Index child =youngest child in the household)

16. Age of index child (months) [../..]

17. Birth order of index child [ ]

18. Birth spacing with next child [.../...] Months

19. Are you breastfeeding index child now?
    1. Yes
    2. No [ ]
(if yes go to quest. 21)

20. How long did you breastfeed him/her?
    1. < 12 Months
    2. 12-18 Months
    3. 18-24 Months [ ]
    4..24 Months

21. Why did you stop breastfeeding?
    1. Next pregnancy
    2. Child refused [ ]
    3. Mother sick
    4. To wean
    5. Others (specify)

22. Have you started giving your child any other food apart from breast milk?
    1.Yes
    2. No [ ]

23. At what age did you start giving him/her other foods
    [../..] Months

24. Type of housing
    1.Permanent
    2.Semi-permanent [ ]
    3.Temporary (grass thatched)

WATER AND SANITATION:

25. What are your sources of water (indicate as many as apply)

1. Tap in compound [ ]
2. Tap in village/market [ ]
3. Dam [ ]
4. Stream [ ]

26. Distance and use of different water sources

type	distance (time taken)	use
1.		
2.		
3.		

27. How do you dispose off your rubbish (indicate as many as apply)

1. Burning [ ]
2. Burying [ ]
3. Feeding animals [ ]
4. Others (specify) [ ]

28. Is there a toilet in the home?

1. Yes
2. No [ ]

MATERNAL AND CHILD CARE ACTIVITIES:

29. Which activities did you do starting from the time you woke up in the morning to the time you went to sleep in the evening yesterday?

TIME	ACTIVITY
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....

30. Are there any activities that you usually do but did not do them yesterday?

ACTIVITY	HOW OFTEN IN A WEEK
1.	.....
2.	.....
3.	.....
4.	.....

31. Which of the above daily and weekly activities do you consider to be childcare?
    1.....
    2.....
    3.....
    4.....
    5.....
    6.....
    7.....

32. Are there any other childcare activities that are not included in the above list?
    1.....
    2.....
    3.....
    4.....

33. Who normally takes care of the child apart from the mother?
    1 . Nobody
    2. Brother/sister [ ]
    3. Grand parent
    4. Others (specify)

34. How old is the person who takes care of the child most of the time (age in years) [../..]

35. What is the care taker's level of education?
    1. No education
    2. Class 1-4
    3. Class 5-8 [ ]
    4. Secondary and above

36. If you did not have enough time for all the activities, which ones would you do first (List them in order of importance).

IMPORTANT CHILD CARE ACTIVITIES:
1. .....
2. .....
3. .....
4. .....
5. .....
6. .....

37. Of all the above activities, which ones usually take more time to carry out?
1. .....
2. .....
3. .....
4. .....

USE OF TIME- SAVING METHODS IN CHILD CARE

38. When the time for all the child care activities plus other activities not related to child care is not enough, are there any methods you use to save time? (FILL IN THE TABLE BELOW).

ACTIVITY	TIME SAVING TECHNIQUES
1. Looking for food	.....
	.....
	.....
2. Fetching firewood	.....
	.....
	.....
3. Fetching water	.....
	.....
	.....
4. Food preparation, cooking and feeding the child	.....
	.....
	.....
5. Care of child's clothing	.....
	.....
	.....
6. Other child care activities (specify)	.....
	.....
	.....

ANTHROPOMETRY:

Name of child ..... Sex: m/f
Age of child (months) ..... Age verified y/n [ ]

	1st.	2nd.	average
Weight (Kg) (Tolerance: +/- 0.1 Kg)	....	....	....
Height (Tolerance: +/- 0.5 cm)	....	....	....

PHYSICAL DESCRIPTION OF THE CHILD AND HIS ENVIRONMENT

(tick whether clean or dirty)

	clean	dirty
Clothes	.....	.....
Nose	.....	.....
Face	.....	.....
Body	.....	.....
Playing environment	.....	.....

PHASE ONE PART TWO:
FOCUS GROUP DISCUSSION

OBJECTIVE OF THE DISCUSSION:
The main objective of the focus group discussion was to confirm the local understanding of child caregiving behaviours and the techniques used to save time in child care activities.

FOCUS GROUP DISCUSSION GUIDELINE QUESTIONS:

COMMUNITY.....DATE.....
MEETING PLACE.....
TIME.....
MODERATOR.....

1. Is there any reason for the mother of young children to devote so much of their time to the care of their children especially when the child is still young?

2. What are some of the reasons?

3. What exactly do you do, or must you do that you consider to be important child care activities?

4. Which child care activities don't you consider important and why?

5. At what age do you have to spend most of your time with your child? Why?

6. Do you normally get enough time to complete your activities on child care? If not, why?

7. Which of the child care activities consume more time?

8. What methods do you use to ensure that you do not run short of time before you complete your Important child care activities?

NOTES FOR THE RECORDER:

Date..... Time: Start.....
End.....
Duration.....

Community.....

Meeting place.....

Number of participants (Mothers with <2 year-old children).....

NAMES AND CHARACTERISTICS OF PARTICIPANTS:

NAME OF MOTHER	AGE OF YOUNGEST CHILD	NUMBER OF CHILDREN <5 YEAR OLD
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		

PHASE TWO OF THE STUDY:

OBSERVATION SESSION

OBSERVATION SHEET:

INSTRUCTIONS:

1. EACH OBSERVATION SHOULD TAKE EXACTLY ONE AND HALF HOUR.

2. OBSERVE AND RECORD ALL MATERNAL AND CHILD CARE ACTIVITIES

3. TIME THE CHILD CARE ACTIVITY FROM THE BEGINNING TO THE END RECORD THE TIME TAKEN IN MINUTES.
   FILL IN THE TIME BUDGET RECORD SHEET PROVIDED

4. IF MORE THAN ONE ACTIVITY IS GOING ON AT THE SAME TIME, USE DIFFERENT STOP WATCHES

5. MARK WITH A STAR (*) ALL THE CHILD CARE ACTIVITIES YOU FIND ALREADY GOING ON WHEN YOU ARRIVE IN THE HOME AND ALSO THOSE YOU LEAVE UNCOMPLETED BY THE TIME YOU LEAVE THE HOME AT THE END OF THE ONE-HALF HOUR PERIOD.

6. COLUMN FOR TOTAL TIME/DAY IS FILLED USING THE FOLLOWING FORMULA:

TOTAL TIME/DAY = A + B*/2

WHERE A = Total time for Activity timed from the beginning to the end
B* = Total time for Incomplete Activities as marked with a star (*) in 5. above.

Date../../.... Name of field worker.....
Village..... House hold #.....
Name of head of household.....
Name of mother.....
Name of index child.....

(Ask the mother to recall all the activities she has done since she got out of bed before you arrived in the household)

Activities done before field worker arrived:
1.....
2.....
3.....
4.....
5.....
6.....
7.....

Observe and record all activities of the mother
1.....
2.....
3.....
4.....
5.....
6.....
7.....
8.....
9.....

TIME BUDGET RECORD SHEET FOR CHILD CARE ACTIVITIES:

DATE:								
ACTIVITY TIME	7.00- A.M.					- 6.30 P.M	TOTAL TIME/ DAY	BRIEF DESCR. OF ACT
1.FOOD PREP.								
2.FEED CHILD ON LIQUID FOOD								
3.CARE OF CLOTHES								
4.WASH CHILD								
5.BREAST-FEED								
6.HOLD CHILD								
7.FEED CHILD ON SOLID FOOD								
8.LOOK FOR FOOD								
9.CHANGE WET CHILD								
10.FETCH WATER								
11.FETCH FUEL								
12.CHILD PLAY								
13.CHILD SLEEP								
14.CARETAKER RESTING/IDLE								
16 OTHERS								

APPENDIX 3: WEIGHT AND HEIGHT MEASUREMENTS

4.7.1.1 Weight Measurement

Weight was obtained using a Salter spring scale measuring upto 25 kg with increments of 100 g. The following steps were followed:

1. The scale was suspended at eye level with a rope from a low branch of a tree or a ceiling pole in the house.
2. The scale was adjusted to "zero" with a pair of empty weighing pants attached to it.
3. The child was then placed in the pair of weighing pants which were suspended by a hook on the weighing scale.
4. Weight measurement was read to the nearest 0.1 kg.

4.7.1.2 Height Measurement

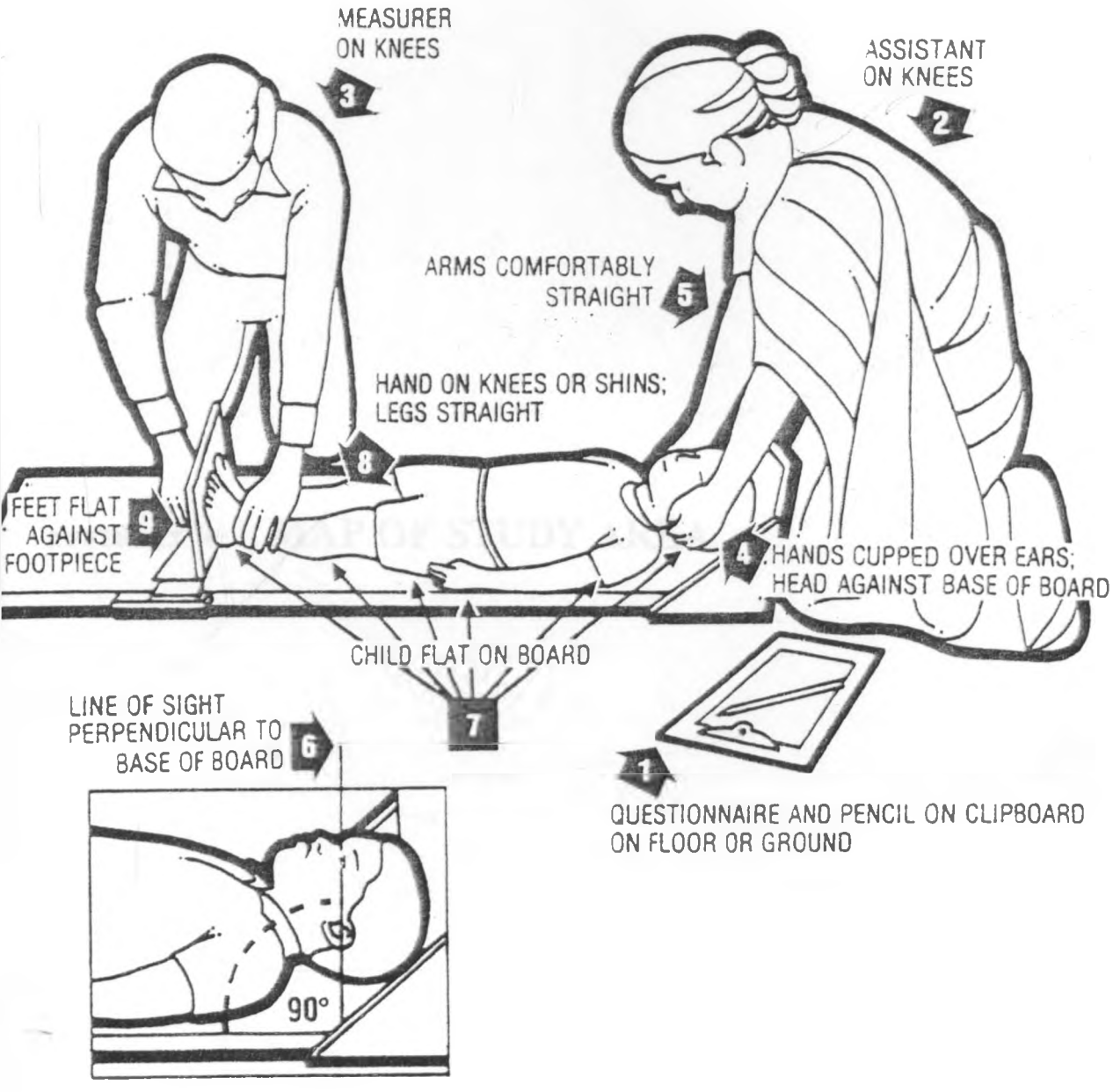
The recumbent length (crown-heel length) of the child was taken with a wooden length-board as follows:

1. The child was laid on the board which was on a flat surface with the head positioned firmly against the fixed headboard, and the head looking straight up.
2. The knees were extended by firm pressure applied by an assistant, and the feet flexed at right angles to the lower legs.
3. The upright sliding footpiece was then moved to obtain firm contact with the heels and the length read to the nearest 0.1 cm (UN, 1986; Quinn,1992).

APPENDIX 3: WEIGHT AND HEIGHT MEASUREMENTS OF THE INDEX CHILDREN (UN, 1986).

Child Weight

Child Length Measurement



APPENDIX 4: MAP OF STUDY AREA

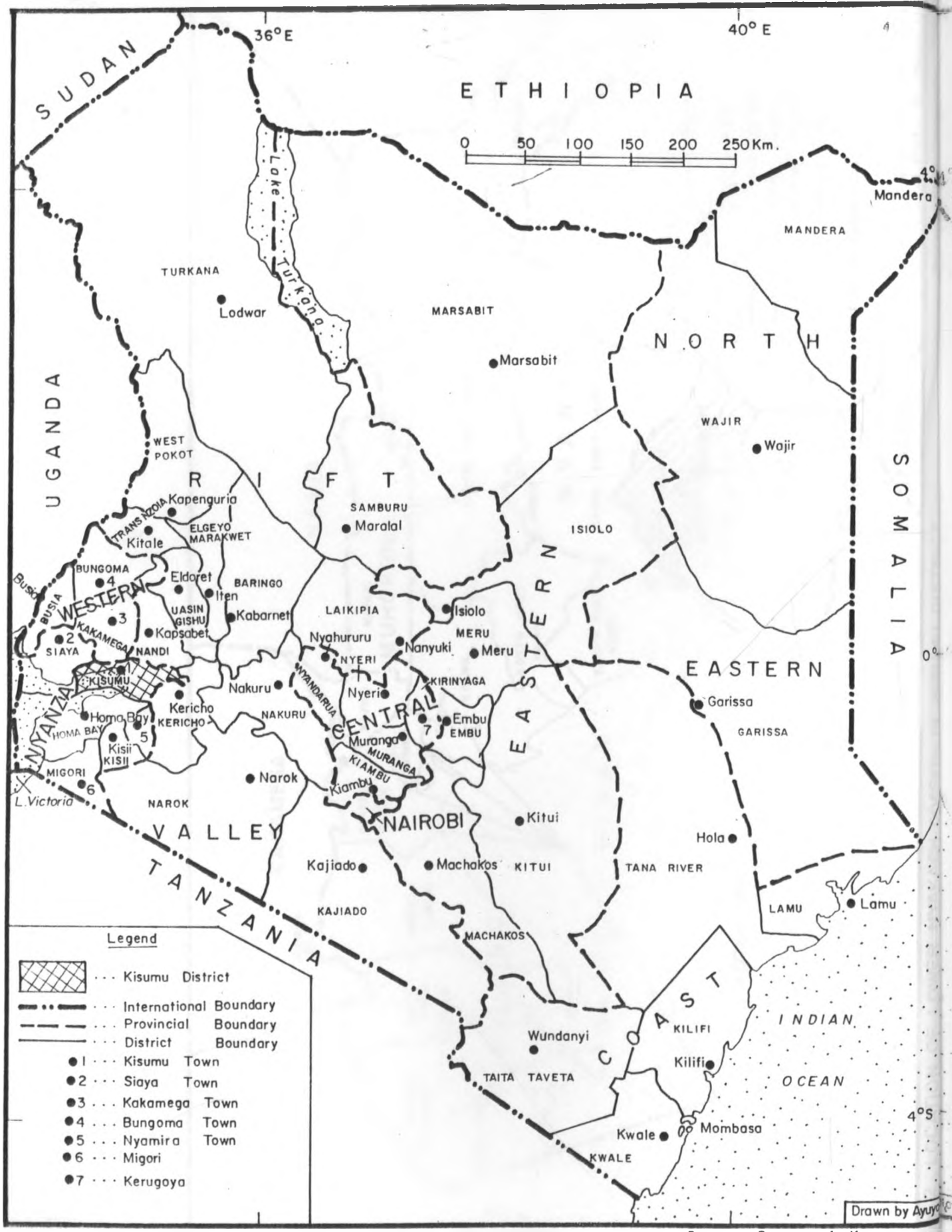
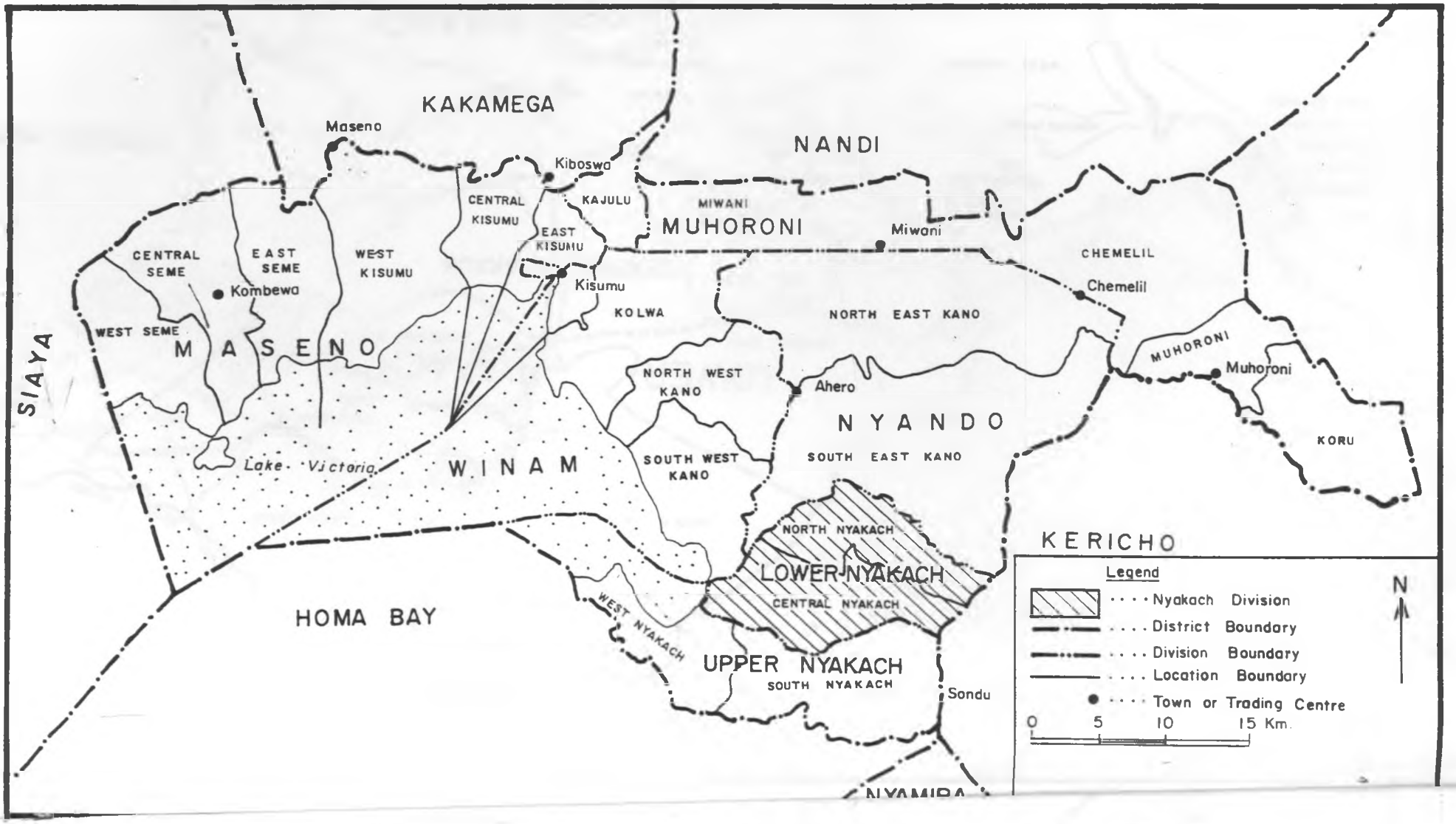
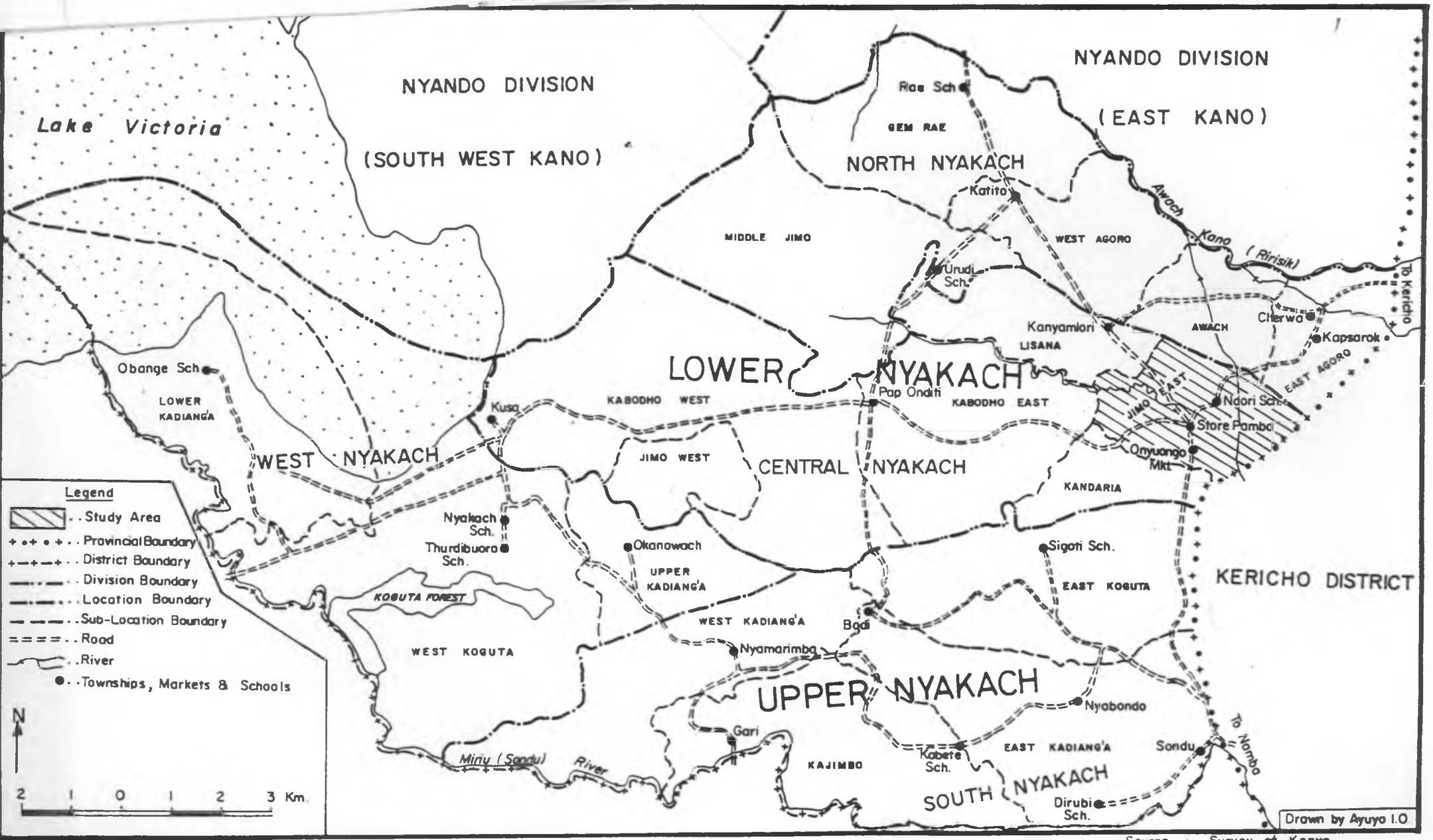


Fig. 1 : LOCATION OF KISUMU DISTRICT IN KENYA.

Source: Survey of Kenya


KAKAMEGA
Maseno
NANDI
Kiboswa
CENTRAL KISUMU
KAJULU
MIWANI
MUHORONI
Miwani
EAST KISUMU
CHEMELIL
CENTRAL SEME
EAST SEME
WEST KISUMU
Kombewa
Kisumu
Chemelil
KOLWA
NORTH EAST KANO
WEST SEME
M A S E N O
SIAYA
NORTH WEST KANO
Ahero
MUHORONI
Muhoroni
N Y A N D O
KORU
Lake Victoria
W I N A M
SOUTH WEST KANO
SOUTH EAST KANO
NORTH NYAKACH
KERICHO
LOWER NYAKACH
CENTRAL NYAKACH
HOMA BAY
WEST NYAKACH
UPPER NYAKACH
SOUTH NYAKACH
Sondu
NYAMIRA
Legend
Nyakach Division
District Boundary
Division Boundary
Location Boundary
Town or Trading Centre
0 5 10 15 Km.
N



Source : Survey of Kenya

Fig. 3 : LOCATION OF STUDY AREA (JIMO EAST SUB-LOCATION) IN LOWER NYAKACH DIVISION.