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TITLE PAGE

WOMEN'S WORK AND CHILD NUTRITION IN AWKA AND MGBAKWU COMMUNITIES OF ANAMBRA STATE

A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE DEGREE IN HUMAN NUTRITION

BY

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APPROVAL PAGE

The research topic was approved by

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THIS 22 DAY OF FEB, 1994

CERTIFICATION

VICTORIA UZOAMAKA NZEKWE, a postgraduate student in the Department of Home Science and Nutrition, has satisfactorily completed the requirements for the degree of Master of Science (M.Sc.) in Human Nutrition. The work embodied in her thesis is original and has not been submitted in part or full for any other diploma and degree of this or other University.

PROJECT SUPERVISOR

DEDICATION

- To my beloved parents, Goddy and Vicky Nzekwe, for the good educational foundation they laid for me.

- To my dear uncle, Chibuzo Onwuchekwa P.E., for inspiring me to continue this educational pursuit.

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1992.

TABLE OF CONTENTS

TABLE OF CONTENTS (CONT'D)

TABLE OF CONTENTS (CONT'D)

TABLE OF CONTENTS (CONT'D)

LIST OF TABLES

LIST OF TABLES (CONTINUED)

LIST OF TABLES (CONT'D)

LIST OF TABLES (CONT'D)

LIST OF FIGURES

ABSTRACT

The effect of women's work on child nutrition was investigated in Awka and Mgbakwu communities of Anambra State, in Nigeria. Three hundred mothers of pre-school children (2-5 years) were used for the study. Questionnaire, 3-day weighed food intake and selected anthropometric indices were used for collecting data.

Results showed that all urban women and 95% of the rural women were employed. The anthropometric values showed that 48.2% of the children were stunted, 22.6% wasted and 12.30% were underweight when compared with National Center for Health Statistics (NCHS) standards. The urban children had better nutritional status than the rural ones. Women in paid employment produced children with significantly higher weight for height (43%) than the self-employed (35%), ($P < 0.05$). Pre-school children from high income households had higher protein and riboflavin intakes than those from low income. Two-year old children of women employed at or near the home had significantly better weight for height than those of women working away from home in both urban and rural areas (urban - 45% : 36%, $P < 0.05$); (rural - 41.7% : 20.8%, $P < 0.05$) respectively.

Nutrition knowledge and practice of urban women were better than those of rural women with mean scores of 65.4% : 40.2%, respectively ($p < 0.05$). Two-year old children taken care of, by child caretakers above 18 years had better weight for height measurements than those cared for, by child caretakers below 18 years in both urban and rural areas (urban - 49.3% : 33.3%, and rural - 44% : 25%, $p < 0.05$).

Nutrition intakes of the pre-school children were below the FAO/WHO values for seven of the nutrients calculated. However, Vitamin A and ascorbic acid were slightly higher. Riboflavin and niacin intakes were relatively lower with mean intakes ranging between 32-66% for the rural and 43-67% for the urban children. Time allocation of the women studied showed that majority of them spent more time on income generating activities than on household activities. More cases of the clinical signs of malnutrition and incidence of illness were observed among the rural children as opposed to urban children.

CHAPTER ONE

1.0 INTRODUCTION

The majority of women of reproductive age in industrialised and less developed countries alike, face the need at some point in their lives to combine economically productive work with nurturing their children (Leslie, 1987). The pattern of women's work has changed substantially in Nigeria. More women are now working away from home and earning cash income with the increased rate of urbanization, industrialisation and migration.

Worldwide economic recession of the past few years and the severe food production crises throughout much of sub-saharan Africa has intensified the burden that poor women in the developing world contribute to, if not assume, the sole responsibility for the economic welfare of their households (Gozo and Aboagye, 1985; Savane, 1985). Few low income women have the option of devoting themselves exclusively to raising their children, even during the first year after childbirth. At the same time, childcare responsibilities during the reproductive years are increasingly being recognised as a major reason for

the high proportion of women in informal sector jobs which tend to be low-paying and insecure. There is an assertion that changing patterns of work among women is a major cause of declining rates of breast feeding, which in turn have a negative effect on child survival and nutritional status (Wray, 1978; Jelliffe, 1962).

Mothers who are not working may be more disposed to assure frequent meals, monitor intra-household food distribution and ensure that their young children get their fair share. While on the other hand, mothers who are working may be more priviledged to produce or purchase the more expensive oils, legumes, animal and protein-dense diets for their children. Also, the feeding practices adopted by mothers have caused many children to suffer from malnutrition especially, protein energy malnutrition - a condition commonly seen in developing countries. Researches have equally shown that there are no single or particular causative factors for malnutrition among children. The already identified causes include poverty, ignorance, mother's education, taboos etc.

Thus, the changing nature of women's work in less developed countries, most especially Nigeria; has led to a desire to understand better how women combine their productive and maternal roles.

1.1 STATEMENT OF PROBLEM

It has been observed that women now engage in economic activities in order to increase the family income. Women are also regarded as "nutrition mediators", meaning their role in food procurement, food handling and child nutrition (Wandel and Holmboe-Ottesen, 1988).

Researchers and planners concerned with child survival and development also have tended to view women as instruments specifically designed to achieve child health. However, they ignore the opportunity cost of women's time and the genuine need in most low income households for mothers to earn income and also care for their children. In Nigeria, today, most women are engaged in professions that take them out of the home and for long hours. Women's work is indeed double-pronged, "work outside the home" and "work inside the home" (Minge-Klevana; 1980). The former

according to her, covers agriculture or wage labour and the latter, care of the family and the household.

The workload of a woman definitely determines her time allocation for the various activities she has to perform including child care. A heavy work load of the woman leaves her with insufficient time to effectively perform her activities at home resulting in discretionary choice of child care and feeding pattern which may negatively affect the child's nutrition (Popkin and Solon, 1976). Incidentally, substitute child caretakers may not provide enough care. Thus, this study is designed to find out the effect of women's work on child nutrition.

1.2 OBJECTIVES

The objectives of this research include:

1. To determine the work pattern of women in various occupations and the effect on child nutritional status.
2. To determine the effect of household income on child nutritional status.
3. To determine the availability and quality of substitute child care utilised by working women.

1.3 SIGNIFICANCE OF THE STUDY

1. The findings of this study will help to reveal facts concerning women's work as a determinant of child nutritional status.
2. The study will guide community nutritionists in counselling women on the need for adequate provision of food for children.
3. Information collected from this study may prove useful in future nutritional researches and planning in other settings.
4. The outcome of this research can as well mobilize political, financial and technical support from international and national levels. This may contribute to the development of policies and programmes to meet the needs of both mothers and children.

Furthermore, this study will highlight the widely differing pattern of female labour force participation and child care practice within the areas of study. This can initiate policy recommendations concerning women's work and child nutrition.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Trends in Women's Work

The majority of women of reproductive age in industrialised and less developed countries alike, face the need at some point in their lives to combine economically productive work with bringing up their children (Leslie, 1987). In 1975, there were estimated to be 57 million women workers in the world who formed over a third of the global labour force. This number has now risen to 676 million and by the turn of the century, International Labour Organization (ILO) projections estimate that this number will have grown to 878 million (Oppong, 1985). Sivard (1985) also reported that the proportion of women officially recorded as being part of the paid labour force in developing countries increased from 28 percent in 1950 to 32 percent in 1985.

Increased urbanization, industrialization and migration mean that more women are working away from home. At the same time, more women have become the primary economic support of themselves and their children. Estimates of the proportion of households

headed by women range from almost half in Botswana, to a third in Jamaica, to at least 10 percent in most Arab Middle-Eastern countries (Youssef and Hetler, 1984).

In Africa, deteriorating economic conditions and the continuing rapid expansion of the youthful labour force fuelled by high levels of fertility, have led to increasing pressure on urban labour markets as job seekers, women as well as men migrate to town (Oppong, 1985). There are enormous differences between African countries but in all of them, the largest percentage of female labour force is found in agriculture.

Women are the primary labourers on small farms, where they are estimated to contribute two-thirds or more of all work hours. Food production as well as processing and often marketing are essentially female responsibilities.

Oppong (1985) also reported that the fastest growing and most dynamic sector of the labour force in Latin America is the urban female population between the age of 25 and 44, especially women in their 30s, the peak time for child bearing and rearing. Between 1970 and 1980, this sector increased by more than 56%,

providing work in trade, domestic service, restaurants, hotels and community services - mainly low status, lowly paid jobs. Mothers who try to find and hold jobs in the urban worlds of factories, offices, schools and hospitals, share similar problems; how to care for children during working hours, usually unequally shared.

Few low income women have the option of devoting themselves exclusively to raising their children, even during the first year after child birth (Leslie, 1987). As the effects of migration and compulsory education spread, there are fewer relatives and older children available to help and in some countries, the running of private day care centres has become a flourishing business. Some women attempt to combine their responsibilities by taking only part-time work and having fewer births, a solution common in Western Europe and North America. Thus, child care responsibilities during the reproductive years are increasingly being recognised as a major reason for the high proportion of women in informal-sector jobs, which tend to be low-paying and insecure.

2.2 Trends in Child Survival and Development

The chances of survival of children in the developing countries have improved considerably in the past twenty years. The infant mortality rates in countries that the World Bank defines as middle income declined from an average of 104 per 1000 deaths in 1965 to 68 in 1985 and child death rates over the same period declined from 17 to 8 deaths per 1000 children aged one to four years. Even in the lowest income countries, the average infant mortality rate fell from 150 to 112 and the average child death rate from 27 to 19 (World Bank, 1987). Inspite of these substantial declines, however, infant and child mortality rates remain distressingly high particularly in Africa (Leslie, 1987). There is also a growing concern that certain trends such as the increasing prevalence of women headed households and more recently, the economic recession, could be reversing the improvements in child survival (Cornia et al. 1987).

One on-going focus of discussion has been the assertion that changing patterns of work among women are a major cause of declining rates of breast feeding,

which in turn have a negative effect on child survival and nutritional status (Wray, 1978; Jelliffe, 1962). In addition, some studies have found that the need to work or factors related to work have been cited by a surprisingly small proportion of women as their reason for not initiating breast feeding, for introducing supplementary bottles or for terminating breast feeding, for instance, the study by Van-Esterik and Greiner (1981).

However, several researches have been carried out on the relationship between women's work and child nutrition (Huffman, 1987; Carloni, 1984; Ware, 1984; Nieves, 1981; Engle, 1980) and they have been based on a relatively small sub-sample of the available literature.

2.3 Women's Work and Child Nutritional Status

A clear message from the life stories of women in many countries is that they are determined to work, to earn and improve the life chances of their children (Oppong, 1985). A mother's work load, no doubt, has a great effect on the child's psychological, intellectual and emotional development and other aspects of child welfare mostly health and nutritional status.

According to Minge-Klevana (1980) women's work is indeed double-pronged, "work outside the home" and "work inside the home". Thus, the dual role of a woman as a housewife and a worker conflicts as time or energy devoted to any particular task must be diverted from other activities. Child care activities may suffer in this case due to the mother's absence in the home, caused by long hours spent at the work place.

A number of issues realy needs to be considered in relating child nutritional status to the mother's work load especially her participation in market labour force. A working woman with more economic resources could provide better nutritious foods especially the more expensive protein sources. On the other hand, the working woman could decide to spend a better part of her income on clothing, expensive processed foods and other interest. Certain factors such as mother's work pattern, time use, socio-economic status and mother's activities on food provision and child related activities have been associated with child's nutrition. However, Nnanyelugo (1983) pointed out that although ignorance or foolish buying of expensive foods account for malnutrition, the low income of the

family is the greater problem. Poor distribution of food within the family may also be a factor but the major factor seems to be poverty.

Several researchers like Aguillon et al. (1982); Golpadas et al. (1982); Popkin (1980) and Grewal et al.(1973) also reported that mothers of most malnourished children were all engaged in economic activities outside the home. Many studies have been carried out on women's work and child nutrition in different parts of the world.

Haggerty (1981) in a study on two neighbourhoods in urban Haiti reported that at 0 to 11 months, children of merchants had significantly poorer growth than those of non-employed women but at 12 to 23 months, children of both merchants and non-employed women had significantly poor growth. A negative but not significant correlation was found between mother's employment and rank of occupation and diversity and quality of child's diet in Bolivia (Moreno-Black, 1983).

According to Adelman (1983), children of non-employed women or women who worked part-time were

significantly taller than children of women who worked full-time, also to produce same child's height at age 5, household with full-time employed mother needed almost double the income of household with part-time or non-employed mother. However, Tripp (1981) in Ghana found that mothers who engaged in trading had children with better nutritional status than children of mothers who were farmers. Engle (1986) in his study of a sub-sample of mothers with children / 7 years in rural sample and / 3 years in urban sample, reported that there was no significant relationship between child nutrition and maternal work in rural sample. In urban sample, one-year olds of employed mothers had significantly lower percentage of median weight for age and two-year olds of employed mothers had significantly higher percentage for median weight for age. In general, percentage for median weight for age of children cared for by adults was better.

In a random sample of households from 34 barrios conducted by Popkin (1983), dietary data of pre-school children showed that children of employed women had significantly higher energy intake but similar protein intake. Also no significant relationship was found

between maternal work variable and child growth. Popkin and Solon (1976) also carried out a study on a sample of households with children 1 to 16 years from four different ecological settings. They reported that there was no significant effect of maternal work on energy and protein intake but in one of the two rural locations, vitamin A intake of children of employed mothers was significantly lower. Also in low income households, children of employed women had more xerophthalmia and in higher income households less.

Another study was carried out by Smith et al. (1983) on mothers who attended mothercraft or health clinics with one or more children / 5 years. Their findings showed no significant relationship between maternal work variables and child growth. Also Soekirman (1985) in his study of a sample of low-wage female workers in Indonesia compared with non-employed women, reported that children of employed women had significantly lower percentage of median weight for age; also children of employed women who worked $\geq$ 45 hours per week had significantly lower percentage of median height for age than women who worked $\not<$ 45 hours, if mother earned less than the

minimum wage but if women earned more than minimum wage, no significant difference was found. Tucker (1986) in his study of children 3 to 5 years old reported that children of employed women had significantly better diets. Also children of women employed away from home had significantly greater dietary diversity while children of women employed at home also had significantly better weight for height and serum carotene; also higher maternal income and more hours worked per week were both significantly positively related to child's diet.

Another study of women with children/ 5 years with analysis done separately for central metropolis, urban and rural was conducted by Wolfe and Behrman (1982). They reported that children of women who worked in the informal sector in the urban sample had significantly better growth. No significant relationship between predicted earning and child growth was found.

The one study that found a simple negative relationship between mother's work and child nutritional status was Powell and Grantham-McGregor's (1985) study of low income urban households in Kingston, Jamaica. However, their findings of a negative relationship is somewhat contradicted by that of the three other studies from the West Indies (Bailey, 1981; Greiner and Latham, 1981; Marchione, 1980). Marchione's (1980) study from Western Jamaica found no direct

correlation between maternal employment and child nutritional status, although his family cohesion factor which included father's presence, mother's presence, father's support, mother's age and mother's employment loaded negatively, was found to be the most significant determinant of better child nutritional status. Data from St. Vincent (Greiner and Latham, 1981) showed no significant relationship between maternal employment and child nutritional status, though only 38 percent of mothers were employed and only 9 percent reported having full-time, year round jobs. Finally, in her study of hospital admissions for malnutrition in Kingston, Bailey (1981) reported a significant relationship between maternal unemployment and child malnutrition, just the opposite of Powell and Grantham-McGregor's (1985) finding.

A study perhaps most frequently cited as showing a negative effect of maternal employment on child nutritional status is that of Popkin and Solon (1976) in Philippines. They reported that the independent effect of mother's work on food expenditures was positive, that is, mother's wages increased weekly food expenditures by one to five percent. Their findings also showed that

children of working mothers had a significant decrease in Vitamin A intake, although this was only true in the rural barrios. The reported decrease in vitamin A intake, futhermore, was only marginally significant. Among households in the two lower income quartiles, they found more children with xerophthalmia when mothers were employed than when they were not; however, a lower proportion of children with xerophthalmia was found among working mothers in the upper two income quartiles.

In a paper focusing on intra-household issues, Popkin (1980), reported that mothers' labour force participation: (a) had no significant effect on children's intake of energy and protein; (b) significantly reduced mother's child care time (although total child care time was not reduced) as well as mother's leisure time and (c) had a significant negative effect on the weight for age and height for age of younger (0-35 months) children although the results were not statistically significant for older pre-school children. In terms of children's dietary intake, Popkin (1983), also found that mother's labour force participation had a significant positive effect on energy intake (an

average increase of 145 kilocalories per day) and a positive but not significant effect on protein intake. When the combined effects of mother's labour force participation, working through changes in child care time and changes in dietary intake on nutritional status were estimated, it was concluded that mother's labour force participation had no significant effect on child nutritional status.

Several other studies also provided some direct evidence of the effect of maternal income on child nutritional status. Kumar (1977), reported from Kerala State in India that income from mother's work had a net positive effect on child nutritional status and that increments in wage income were translated into improved nutrition more readily among wage earning than non-wage earning women. Tucker (1986), from Panama also reported a positive relationship between maternal income and child diet as well as a positive relationship between maternal income activity at home and anthropometric measures of child nutritional status.

Findings concerning differences in nutritional status of children of women who work part-time and women who work full-time are contradictory. Adelman

(1983); in Peru found that at the same level of income (and controlling for genetic factors), mothers who did not work or worked only part-time had taller children than those who worked full-time. A similar inference about possible positive effects of part-time versus full-time work might be drawn from Wolfe and Behrman's (1982) study from Nicaragua. They reported that better nutritional status (by at least some anthropometric measures) was found among children whose mothers worked in the informal sector than among children whose mothers had formal-sector or domestic jobs. However, the opposite finding is reported by Franklin (1979) from Colombia. He found a negative association of child nutritional status with part-time but not with full-time maternal employment.

2.4 Women's Work and Time Allocation

In a study on the time allocation of women, Okeke et al (1985), mentioned time as one of the major resources at the disposal of the home manager (mother) which she carefully plans and uses to achieve best results in the home, distributing the time (24 hours) among all the activities she has to perform.

Khare (1979) also writes that a woman allocates her time and energy to household activities such as food procurement, cooking and feeding. He further said that time spent on these activities such as cooking and fuel acquisition will be reduced depending on economic and social circumstances. The time available to the mother if she performs the dual role of mother/housewife and working mother is reduced, thus resulting in the reduction of time devoted to her family and normal household chores.

According to King and Evenson (1983), the three determinants of time allocation are occupation, market work and children. The latter they said, is a factor known to greatly affect the time allocation of married persons; with parents having many older children spending less time on child care. The time spent by the rural mother on her activities will be different from that of her urban counterpart who may have time-saving devices such as cooker, refrigerator, portable tap water, pots, pans and other electrically operated facilities. This is as a result of the long time spent fetching water and firewood, pounding grain or food with mortar and pestle and in food preparation, processing

and preservation (Uyanga (1980); Popkin (1980). Gupta and Mwambe (1976) in their study observed that women work more than men. In one region, they found that the women cultivated the fields while the men only shared the cash crops and drank. Likewise, Berio (1979) observed that women worked for longer hours than men, working 10 hours 48 minutes as against 7½ hours a day for their male counterparts. The women spent 4 hours on house work for which the men spent a little over one hour. A difference of 3.2 hours in child care for working and non-working mothers was observed by Popkin (1980) and Uyanga (1980).

Tucker (1988), emphasized that maternal employment means decreased time available to spend with children in the home, a situation generally expected to have a negative effect on child welfare. She observed that women spent 7 hours a day in household production, 1.5 hours on work and income generation, 6.5 hours on leisure and social activities and 9 hours sleeping. However, among mothers employed outside the home (who put in on average, an 8 hour work day) there were significant decreases in time spent on other activities.

Mothers employed outside the home spend approximately 4.5 hours less on home production, 1.5 hours less in leisure and social activities, and one hour less sleeping. Within this, maternal care time - specifically time spent on child care and on food preparation was found to decrease significantly when mothers were working away from home.

In another study by Engle (1989) in Guatemala, she reported that agricultural workers spent less than an hour per day in agricultural work. In contrast, those working outside the home spent an average of 7 hours per day in work activities in the rural villages and 9 hours per day in work outside the home in the urban town. Typically, a mother working outside the home would arise at 5 a.m., feed her children, prepare and leave food for lunch and board the bus to the city by 6.30 a.m. She might arrive at a factory by 7.30 a.m. and work until 5 p.m. with a half an hour for lunch. She would arrive home again at 6.00 or 6.30 p.m., depending on the crowding on the buses. She might also have gone to the city to work in a cafetaria as a waitress or she might have purchased food at the central market to resell in another area. Work in the home and

marketing are both less time-intensive, requiring about 5 to 7 hours per day in the urban area and 3 to 5 hours per day in the rural villages. Engle (1989) further reported that there was a significant difference in total hours spent on productive activities, (income earning and household activities) between working and non-working women. However, they spent similar amounts of time on household activities. The only significant difference in time spent on such activity was washing clothes during the fall round in the rural villages. Clothes washing is a very time consuming and social activity in several villages, requiring a day-long trip to a nearby river to wash and dry the clothes and the time spent is clearly shortened.

Paolisso et al.(1989) in their study in rural Kenya observed that two important household activities that require women to leave the compound are drawing water and collecting firewood. Only a few households have a water tap in the compound or a good source of firewood nearby, or in the latter case, rely extensively on purchased charcoal for cooking fuel. Rather women must walk long distances, often over hilly terrain, to

collect water and firewood. That the water canisters or tied bundles can weigh up to 25kg explains why women consider this type of work to be particularly exhausting. Paolisso et al.(1989) further identified several reasonable explanations for the inverse correlation between infant holding and food production including; (1) Women decrease food production work to compensate for time in child care. (2) Women decrease time devoted to child when spending more time in food production and (3) Women increase time allocation to food production when free of child care responsibilities. If a mother decreases time in necessary child care without delegating this responsibility to another, the child is likely to suffer the consequences.

2.5 Women's Work and Child Care

Child care can be defined as the process of attending to the child's basic needs of shelter, protection, food, clothing and health (Myers and Indriso, 1987). Any or all of these functions can be delegated to the person charged with care, in so far as they arise on a continuous or periodic (several hourly) basis. It is not obvious that child care by

persons other than the mother is necessarilly inferior or detrimental to the child's welfare.

On the other hand, "Work" referring to productive activities and the allocation of human labour time is an "economic" issue (Joekes, 1987). The care of children is seen within this discipline as something that is mutually exclusive with work, that there is a conflict (specific to women) between the demands of employment or income generation and child rearing (Becker, 1981). Marshall (1987) and Popkin (1980) observed that child rearing is a time intensive activity for which a mother may have limited time as she has other household activities to attend to or manage and at the same time perform her economic functions. Some researchers however reported that women in the rural areas work for rather long hours but their economic role is such that, it is compatible with their child care and other household activities (Wandel and Holmboe-Ottesen, 1988; Popkin, 1980; Uyanga, 1980 ; Nerlove, 1974).

Child care alternatives include three categories of potential caretakers: other members of the mother's own household; family, friends and neighbours,

external to the domestic unit; and formal child care facilities provided on an institutional basis (Joekes, 1987). According to Minge-Klevana (1980), in particularly poorer households, children aged 6-9 years perform an appreciable portion of child care duties and in other societies, the older sibling is the primary child caretaker, a role performed by mothers in western industrialised countries. Bamisaiye and Oyediran (1983) however, observed that some working mothers were assisted with child care by attendants in creches or day nurseries. Commenting still on substitutes for mother's child care, Uyanga (1980) reported that both girls and boys between the ages of 7-15 years and 7-12 years respectively and in poorer working mother households played the role of child caretakers.

There are however, anecdotal reports that unemployed men in Jamaica will more readily mind the children than do housework (Powell, 1987). In rare cases where the fathers input into domestic production is observed within a time allocation study, direct child care is reported to take up only one hour or less each week of father's time, compared to 9-12 hours of the mother's (Popkin, 1980).

In most developing countries, some commercial or communally provided child care services have been established. Formal child care and pre-school services are those provided by governments, international funding agencies, religious groups, charitable organizations and employers. Many countries have passed legislation mandating that establishments with over a certain number of female employees of child bearing age must provide child care facilities. Many countries also require nursing breaks, have formal maternity leave policies and other considerations for mothers of infants (APHA, 1984). However, some studies report a low rate of utilization of formal facilities. According to Date-Bah (1987) only 10 percent of employed women in urban areas in Ghana use a nursery or other formal facility for daily child care. Popkin (1980) also asserts that the mother surrogates are likely to fail in their duty of providing the child with adequate quality of substitute child care. This has been of great concern to some working mothers as reported by some researchers.

Some working mothers had given up their jobs or lost some amount of money by returning to work late

(Marshall, 1987). Uyanga (1980) also noted that some working mothers try and stay with or give their children extra attention when they return from work, are off-duty or over the weekends, to make up for the time they left their children for work. In the case of Ghanaian women in paid employment, the single most common child caretakers for their children were the maternal grand-mothers accounting for 36 percent of cases (Date-Bah, 1987).

Data from various other developing countries also show that a working mother often depends on her own mother or mother-in-law for child care during the working hours (Anker and Hein, 1985). Likewise, care of children by older siblings is a common form of child care in developing countries. It ranks as the most important type of non-maternal child care in urban areas of the Dominican Republic and the second most important source in Sri Lanka (urban and rural), Urban Brazil, rural Dominican Republic and Peru (urban and rural) (OEF, 1979).

Hence, adequate child care is an important intermediary between women's economic participation and child welfare. The net impact of increased income

and decreased maternal child care time is a function of the quality of substitute child care.

2.6 Assessment of Nutritional Status

Nutritional status of any given group is defined by Omolulu (1980) as the extent to which the customary diet meets the nutritional requirements. He further stated that food and dietary patterns in different population groups in Nigeria had so far received limited attention. Thus, it has not been possible to obtain a reference standard to measure the nutritional status of Nigerians. Anthropometry and food consumption surveys are the simplest and most reliable methods of assessing the nutritional status of people in a community (Jelliffe, 1966). He further stated that these methods have limitations but taken together, they are capable of presenting a reasonable and reliable picture of the nutritional status of a group.

Cross (1987) also observed that the complexity of socio-economic, cultural, educational and other factors that influence poverty are difficult to measure but food and nutrient intake could be easily measured.

According to Ponser et al (1987), evaluation of nutrient intake and comparison with FAO/WHO recommendations is an important step in determining the adequacy of dietary pattern of a population. The socio-economic level of the family may influence the type and amount of food available, the health status of the children, the quality of medical care available and even the degree of mental stimulation directed toward the children (Quatromon et al, 1987). They further reported that the emotional stress which is often associated with poor socio-economic conditions has been found to interfere with the absorption and utilization of nutrients despite adequate food intake. Some dietary intake studies done in Nigeria showed low levels of essential nutrients and low food intake (Nnanyelugo et al, 1985; Falusi, 1985; Addo, 1983 and Nnanyelugo, 1982[a]). The leading factors responsible for low food intake as reported by these workers include seasonal variations in food supply, low income and poor food distribution system and other cultural factors.

Low levels of thiamin, riboflavin and niacin have been reported among many Nigerians. Vitamin A, ascorbic acid and iron intakes have been found to be adequate by

these workers while calcium, energy and protein were below the FAO/WHO/UNU (1985) recommendations.

Nutritional status of infants and children is an indicator of the nutritional status of a community (Falusi, 1985; Hart and Atinmo, 1982). Jones et al, (1985), also reported that in a child, the pattern of poor growth may be the earliest clinical manifestation of malnutrition. It is, therefore, important to monitor changes in growth rate as well as in food intake. According to Quatromon et al (1987), the factors resulting in growth failures in a majority of individuals and developmental retardation are environmental in nature. Such factors include low income and poor food availability. They also suggested that the child's socio-economic status has the most significant impact on growth process. The authors equally reported that children of lower economic status were more likely to have nutrient deficiencies and chronic diseases which tend to retard growth. Greater income was associated with greater stature, great birth weight, earlier maturation and earlier attainment of maximum stature. Thus, growth retardation is associated mainly with children from low income families.

Studies done in Nigeria, (Falusi, 1985; Addo, 1983 and Nnanyelugo, 1982[b]), have shown that children from low socio-economic backgrounds have low weight and height for age. Children from higher income families were found to have better weight and height attainments.

2.7 Income and Nutrition Practice

The present economic situation in Nigeria has made it very difficult for many households to maintain adequate dietary habits. In a study conducted by Enwonwu (1980), it was reported that the nutrient intakes of a high proportion of Nigerian population were below the recommended requirements. Naturally, there are restrictions among the poor on the amount of money that can be spent on food. Emmons (1986) and Kain and Oscar (1985), both observed that poor families have inadequate diets even though they spent a larger proportion of their income on food than those with higher incomes. The amount spent on food to a reasonable extent determines the quality, quantity and variety of food items to purchase. The economic level of households, therefore, has an impact on their food purchase,

consumption pattern and nutrition practice, maybe their nutritional status too.

Socio-economic factors are assumed to have the greatest influence on food choice of people in the lower socio-economic categories (Reaburn and Deisy, 1979). To these group of people satisfaction of hunger takes priority. The little money available for food is spent on the cheapest of the staples to provide bulk (Doughty and Church, 1976). Koh and Caples (1979[a]) found that the level of income highly correlated with food consumption pattern. They also reported that households with higher incomes had better diets than those with lower incomes. The ten states nutrition survey in the United States by Koh and Caples (1979[b]) showed that the poorest nutrient intake and highest prevalence of nutritional deficiencies occurred among the lower income blacks. If there were enough money to be spent on food, people would have followed the guidance (of nutritional practice) more readily.

Falusi (1985), reported that the frequency of food intake by income groups revealed that high income groups consumed better food than low income in terms

of quality and quantity. Also, Quatromon et al (1987), observed that as income increased, the proportion of total income spent on food decreased and the nutritive quality of the diet increased.

CHAPTER THREE

3.0 MATERIALS AND METHODS

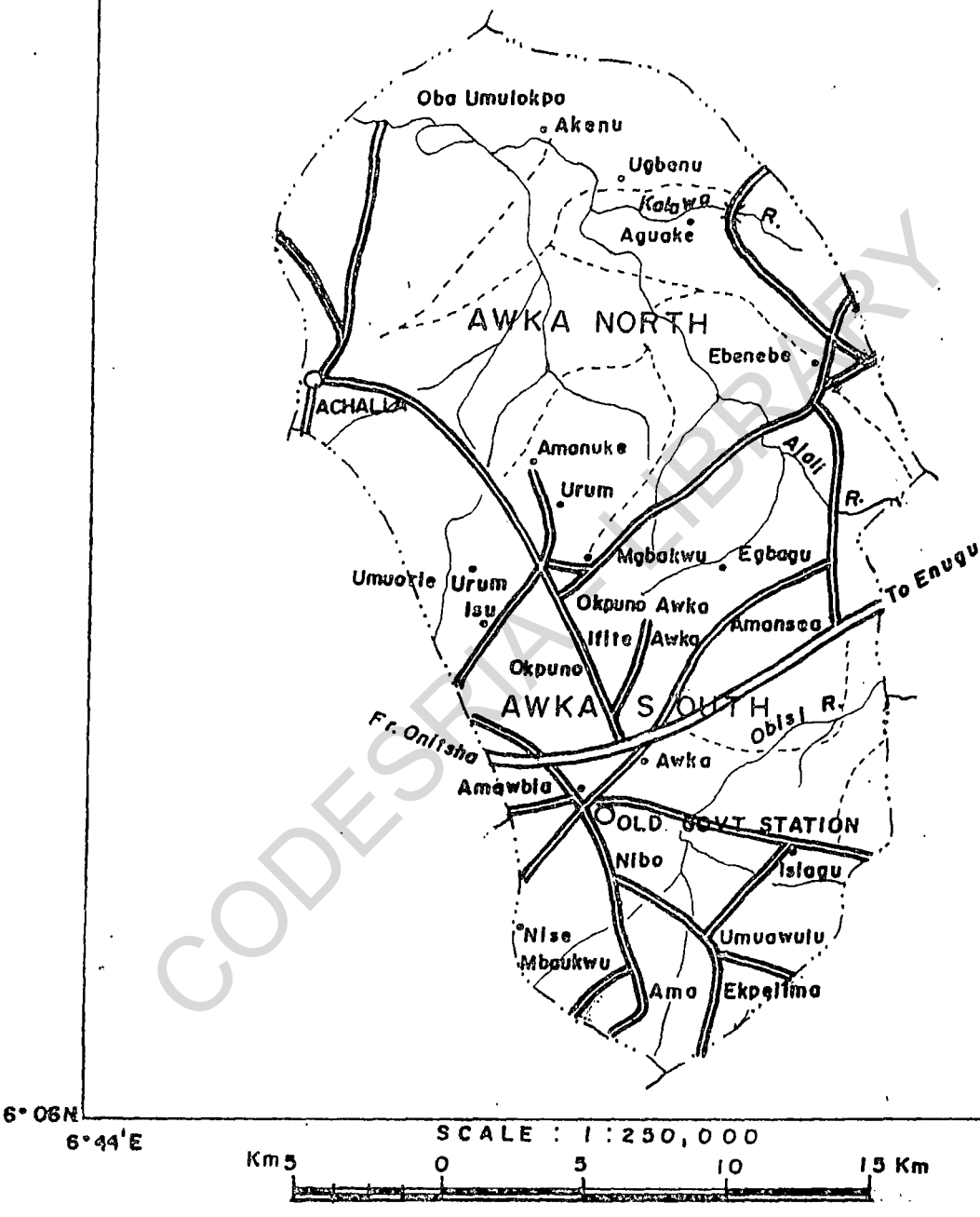
3.1 Background Information

Anambra State of Nigeria is one of the thirty-one states into which the country is divided. The state derives its name from the placid Anambra River which is a tributary of the River Niger. The state has an estimated population of about 5,273,560 living in an area of approximately 16.727.1 square kilometre of land. The population density is 215 per square kilometre. Situated on a rolling flat land on the eastern plains of the River Niger, the state is bounded by four other states with which it shares common boundaries. It spreads Southwards to the boundary with Imo State and Northwards to the Enugu State boundary. In the East and West, it is flanked by the Cross-River and Delta States respectively.

The study was conducted between January and July 1992 in Awka urban and Mgbakwu; a rural community both in Awka South and Awka North Local Government Areas of Anambra State respectively as shown in Fig. I. Awka is the capital of Anambra State and is one of the historic towns in Igboland. It is located some 72

AWKA LOCAL GOVT. AREA

FIG. 1: SITUATION OF AWKA AND MGBAKWU COMMUNITIES.



kilometres south-west of Enugu and 38 kilometres north-east of Onitsha. It is surrounded by Amansea in the north, Nawfia in the south, Okpuno in the west, Isiagu in the east and Nibo in the south-east. Awka covers an area of about 1718 square kilometres with an estimated population of 48,260 with women out-numbering men in proportion of 50.88% and 49.12%, respectively. (Statistics Department, Anambra State Ministry of Economic Development, Awka). The topography of Awka is that of a table land although the north end has a slightly higher altitude than the south end. Awka lies within the tropical rainforest belt of Southern Nigeria, with two seasonal climatic conditions - rainy and dry seasons and a short spell of harmattan. The period between February and May is usually very hot, while the wet season stretches between June and September. Harmattan falls between December and February. The inhabitants of Awka urban are mainly civil servants working in government establishments, traders and a few farmers.

The second study area is Mgbakwu, an autonomous rural community in Awka north local government area. The town covers an estimated land area of 300 square

kilometres with an estimated population of 20,352 with women also out-numbering the men in proportions of 51.88% and 48.12% respectively.

Mgbakwu is surrounded by the following towns: on the east is Ebenebe, on the west is Isu-Aniocha and Achalla towns, on the north is Urum and Amanuke towns while on the south is Okpuno and Awka towns. The topography is flat and the vegetation is a combination of Guinea savannah and tropical rainforest. The soil is principally loamy but there are areas of arable clay soil suitable for farming which is the major occupation of the people. The rural community has a few health facilities namely a government comprehensive health centre, a community health centre and a few privately owned health centres. Social amenities like pipe-borne water and electricity are all lacking in the community.

The main food products available in both study areas are yam (Dioscorea spp.), cassava (Manihot esculenta). Other staples are cowpea (Vigna unguiculata), bambara groundnut (Voandzeia subterranea), pigeon pea (Cajanus cajan), groundnuts (Arachis hypogea). Green leafy vegetables available includes fluted pumpkin (Telfaria spp), okro (Hibiscus esculentus) and fruits.

Sources of animal protein include cattle brought from the northern part of the country, imported stockfish, frozen fish, snails, smoked dried fish and dried shrimps.

3.2.1. Sample Selection

A total of 300 women who had pre-school children (2-5 years) were randomly selected from the urban and rural areas. List of the women were compiled by making several visits to their homes. From the information given by women during the home visits, they were grouped based on their household-economic group and occupational status.

3.2.2 Economic and Occupational Grouping

Women were classified into three economic groups. This was based on the 1978 Udoji salary grading (Federal Office of Statistics, Lagos); also taking note of the new minimum wage range. Women whose total household income were below ₦6,000* per annum represented the low income group, while those whose income were from ₦7,000 to ₦16,000 formed the middle income. Those with income range above ₦16,000 formed the high income group.

*Values of Naira fluctuates between ₦15.00 and ₦19.00 per U.S. Dollar.

For the occupational grouping, women were classified into eight groups namely: the school teachers, civil servants, bank staff, hospital staff, private industry/company staff, government-owned industry/company staff, self-employed and the unemployed.

3.3 Materials for Data Collection

(a) Questionnaire

A validated, structured questionnaire and interview schedule was used in data collection after pretesting on a randomly selected group similar to the survey sample. The questionnaire was used to collect information on the following:

i General socio-economic and demographic data.

ii Work pattern of women.

iii Household feeding patterns.

iv Child care patterns.

v Nutrition knowledge and practice of mothers.

vi Women's time allocation.

(b) Food record form (appendix 2) was used for recording various food items and the quantities consumed.

(c) Kitchen scale; portable kitchen scale (Salter) was used for weighing the raw ingredients and cooked food consumed.

(d) Portable scale; (UNICEF) was used for measuring body weight.

(e) Caliberated height rod was used to measure height.

3.4 Data Collection

Questionnaire was administered at homes. Illiterate subjects were interviewed in the local language.

(a) Anthropometric Measurement

Height, weight and mid upper arm circumference measurements of 504 pre-school children were recorded, namely 235 from therural area and 269 from the urban area. The parameters used for the assessment of nutritional status were:

i Weight for age

ii Height for age

iii Weight for Height.

Weight Measurement

The subjects were weighed with minimum clothing. Portable scale (UNICEF) was used for body weight measurement. Each subject was made to stand on the scale when the pointer was at zero. Two or more measurements were taken to the nearest 0.1kg. The

scale was standardised every day before measurements were made.

Height Measurement

A caliberated height rod was used to take height measurement. Each subject was measured without shoes. The subject was made to stand on a flat surface by the tape with feet parallel and with heels, buttocks and shoulders and back of head touching the height rod. Measurements were taken to the nearest 0.1cm.

Clinical Signs

Clinical signs of nutritional diseases were observed. The observations were on the eyes for such signs as bitots spots or keratomalacia, on the skin and bones for rough skin and rickets, on the hair for hair colour and on the mouth for angular stomatitis, also for oedema and wasting.

(b) Weighed food Intake

A sub-sample of 20 pre-school children (2-5 years) were used for the dietary survey, due to the high refusal rate encountered. It was realy difficult to get this number as most households declined to participate

in the weighed food intake study. Their reason was that the economic recession in the country had made it difficult for people to feed well. Thus, issues like food preparation should be done privately devoid of interferences from any researcher.

The subjects comprised of both sexes. Nutrient intake records were kept for three consecutive days including a weekend. Weights of ingredients used in the preparation of family meals were measured on the kitchen (Salter) scale. Various food items and the quantities consumed were recorded including plate wastes.

3.5 Data and Statistical Analysis

(ai) Data from the Questionnaire

Data from the questionnaire were analyzed at the Computing Centre of the Faculty of Agriculture, University of Nigeria, Nsukka, using frequencies, percentages, analysis of variance and correlation analysis.

ii. Nutrition knowledge Score

The score on nutrition knowledge and practice test were obtained by summing up the correct points. The

maximum score attainable was 24 points. The scores were arranged in ranges of 0-8, 9-16, and 17-24 which represented low, moderate and high respectively.

(b) Weighed food Intake

Water conversion factor (appendix 3) was determined to standardize the water content of foods consumed. Conversion factor "Y" was obtained thus:

$$\frac{\text{\% dry weight of sample}}{\text{\% dry weight of tabulated value}} = Y.$$

The amount of raw weight of food ingested was calculated as shown:

$$\frac{\text{amount of cooked food consumed} \times \text{raw weight}}{\text{Total cooked weight of food.}}$$

Food composition tables, Platt (1975), FAO (1968) were used to calculate the nutrient contents of food items consumed as shown:

$$\text{Nutrient content of food} = \frac{\text{amount of raw food} \times \text{tabulated nutrient value} \times Y}{100.}$$

Nutrient intakes were added for each meal and for each day on individual basis. Means and standard deviations

were calculated for each nutrient for the different age groups. Mean intakes were compared with the FAO/WHO standards for each age group. FAO/WHO (1970) requirements were used to assess the adequacy of ascorbic acid and iron. The adequacy of thiamin, niacin and riboflavin was assessed using FAO/WHO (1973) requirements. Protein and energy levels were assessed using FAO/WHO/UNU (1985) requirements.

(c) Anthropometric Measurement Analysis

The National Centre for Health Statistics (NCHS) 1976 cut-off points were used for screening normal from malnourished individuals based on the parameters assessed. Cut-off points can be expressed as percentage of the median value of reference population percentiles or the standard deviation units. Percentage of median value and percentiles were the cut-off points used in this study as shown below:

i) Weight for Age: Method used was NCHS percentiles.

50th - 3rd percentiles : Normal.

$\geqslant$3rd percentile : Malnourished.

ii. Height for Age: Method used was percentage of median:

≤90% : Adequate

≥90% : Stunted or chronically malnourished.

iii. Weight for Height: Method used was NCHS percentiles:

75th - 25th : Normal

10th - 25th : Mild malnutrition

10th - 5th : Moderate malnutrition

≥5th : Severe malnutrition.

Mean values from the study for height and weight were compared with NCHS values. Appropriate cut-off points were applied in each case to screen malnourished children.

CHAPTER FOUR

4.0 RESULTS

4.1 Socio-Economic Data of Subjects

The personal characteristics of the women used for the study are shown in Tables 1A and 1B. In terms of their age categories, 6.7% and 2.7% of the respondents from the rural and urban areas respectively were below 20 years. Forty-two percent of those from the rural and 55.3% from the urban areas were between the age range of 31-40 years. Eighty-four percent and 89.3% of the respondents from the rural and urban areas respectively, were married. Others were either single, widowed, divorced or separated.

Only 4% of the rural women had no formal education, and 46% of the urban women completed elementary school. Thirty-six percent of those from the urban area had Bachelor of Science (B.Sc.) degree, other higher degrees or their equivalents. Approximately, thirty-one percent of the urban women also had the ordinary national diploma (O.N.D.) or its equivalents.

As shown in Table 1B, 35.3% of the husbands of the rural women were artisans while others were farmers (29.4%), civil servants (9.6%) and traders (25.7%). However, 40.1% of the urban respondents indicated that their husbands were civil servants.

Most (84%) of the rural and urban (89%) women had male-headed households while 16% and 11% of the rural and urban women, respectively, had female-headed households.

With regard to their living accommodation, 78.7% of the rural respondents lived in personal/family houses while 70.7% of the urban respondents lived in rented houses/government quarters. Most of the rural women (60%) had a family size of 6-10 members, same with 63.7% of the urban respondents. Others had 1-5 family members.

Pre-school children of the five year old category in the respondents' households were 32.8% and 32.4% from the rural and urban areas respectively. Two-year olds were 18.7% in the rural and 24.9% in the urban area. Child mortality rate before the age of five in the respondents' households had 44 cases recorded in the rural area and 21 cases recorded in the urban area.

Table 1A: Personal Characteristics of Subjects

Personal characteristics	Sectoral Zone			
	RURAL		URBAN	
	No.	%	No.	%
Age categories (years)				
Below 20	10	(6.7)	4	(2.7)
21 - 30	46	(30.7)	29	(19.3)
31 - 40	64	(42.7)	83	(55.3)
41 and above	30	(20)	34	(22.7)
Total	150	100.0	150	100.0
Marital status				
Single	5	(3.3)	1	(0.7)
Married	126	(84)	134	(89.3)
Widowed	9	(6)	7	(4.7)
Divorced	4	(2.7)	2	(1.3)
Separated	6	(4)	6	(4)
Total	150	100.0	150	100.0
Educational status				
No formal education	6	(4)	-	-
Elementary school uncompleted	25	(16.7)	3	(2)
Elementary school completed	69	(46)	15	(10)
WASC/GCE/SSCE	30	(20)	31	(20.7)
OND/NCE/TC II/NRN or its equivalents	16	(10.7)	46	(30.7)
B.Sc, M.Sc, Ph.D or its equivalents	4	(2.6)	55	(36.6)
Total	150	100.0	150	100.0

Table 1B: Personal characteristics of Subjects

Personal characteristics	Sectoral Zone			
	Rural		Urban	
	No.	%	No.	%
Husbands' occupation				
Farmer	40	(29.4)	6	(4.2)
Civil servant	13	(9.6)	57	(40.1)
Trader	35	(25.7)	30	(21.1)
Artisan	48	(35.3)	49	(35)
Total	136	100.0	142	100.0
Head of Household				
Male	126	(84)	134	(89)
Female	24	(16)	16	(11)
Total	150	100.0	150	100.0
Living Accommodation				
Personal/family house	118	(78.7)	44	(29.3)
Rented house/government quarters	32	(21.3)	106	(70.7)
Total	150	100.0	150	100.0
Family size				
1-5 members	60	(40)	49	(32.7)
6-10 members	90	(60)	101	(63.7)
Total	150	100.0	150	100.0
Number of 2-5 years olds in households				
2 year olds	44	(18.7)	67	(24.9)
3 year olds	71	(30.2)	59	(21.9)
4 year olds	43	(18.3)	56	(20.8)
5 year olds	71	(32.8)	87	(32.4)
Total	150	100.0	150	100.0
Child mortality rate in households	44 cases		21 cases	

4.2 Women's Work Pattern

Employment and occupational status of Women

Figure 2 shows that all the urban women and 95% of the rural women were employed. Only 5% of the respondents from the rural area were unemployed. The occupational status of the respondents are shown in Figure 3. Sixty-six percent of the rural women were self-employed and 15.3% of the urban women were civil servants. None of the rural women were civil servants and bank staff. However, the other respondents from both study areas were hospital staff, private industry/company staff and government-owned industry/company staff.

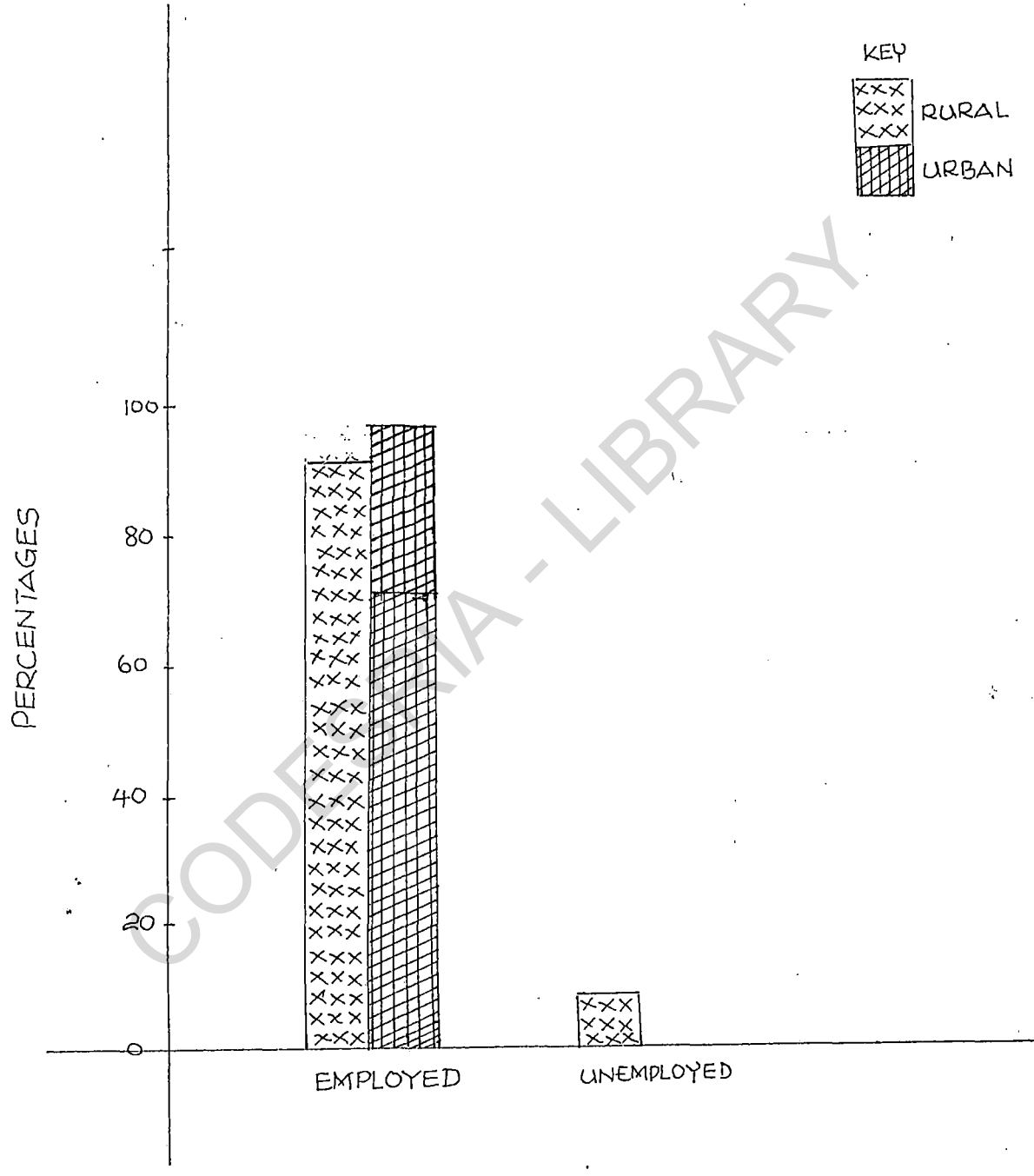


FIG. 2 : EMPLOYMENT STATUS OF WOMEN

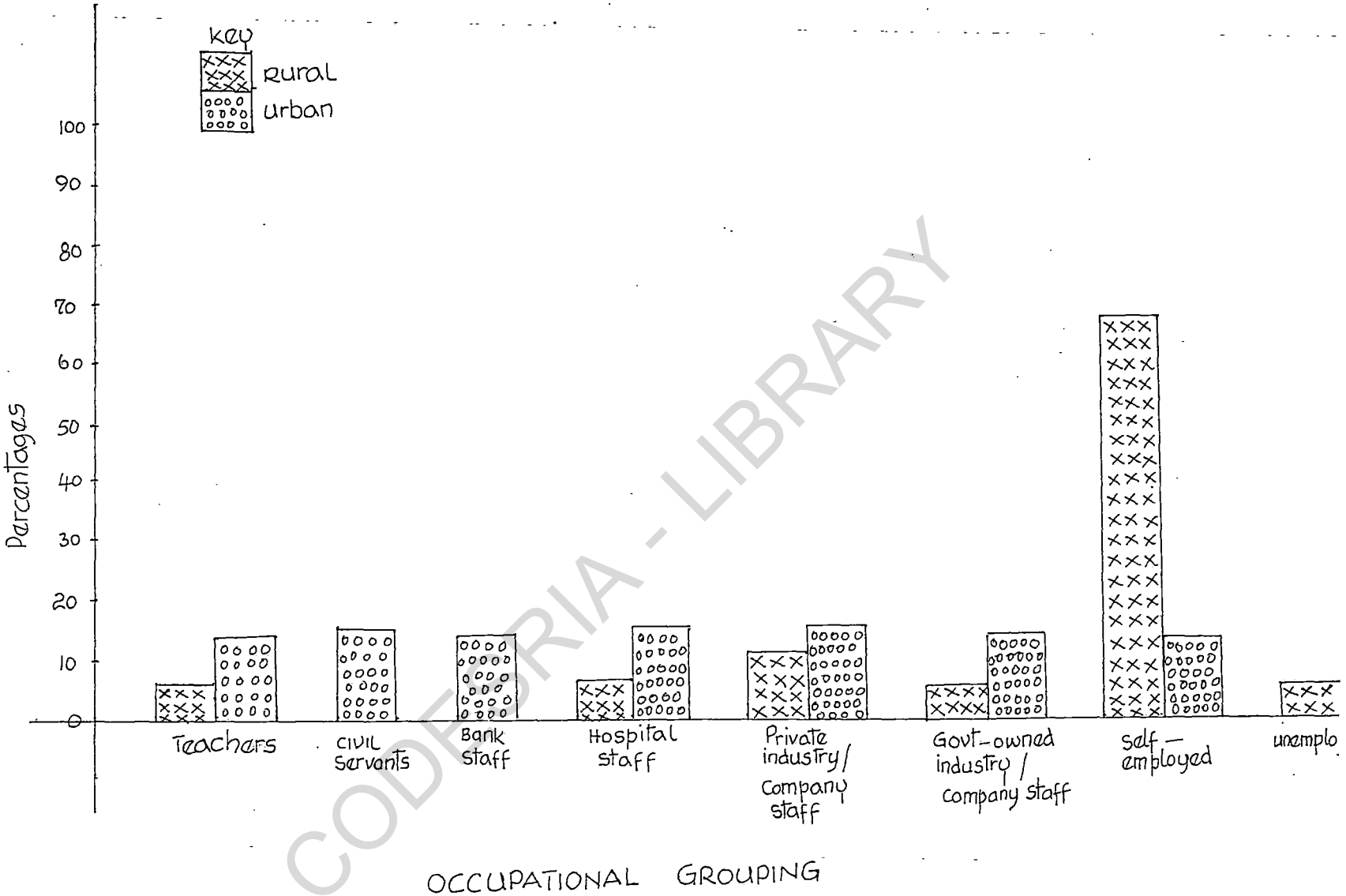


FIG. 3 OCCUPATIONAL STATUS OF WOMEN

4.2.1 Women's duration of being in employment and location of workplaces

Table 2 shows the distribution of respondents according to their span of employment. Forty-one percent of the rural women indicated being in employment within 6-10 years, same with 46% of the urban women. Only a small proportion of the women, 4.9% and 6.7% from the rural and urban areas respectively, have been in employment for 21-30 years.

In terms of location of workplaces, 52% of the rural and 53.3% of the urban women were working away from home. Others were either working within the home or near the home as shown in Figure 4.

Table 2: Distribution of the women according to their duration of being in employment

Duration	Rural		Urban	
	No.	%	No.	%
1-5 years	44	(31)	29	(19.3)
6-10 years	59	(41.5)	69	(46)
11-15 years	24	(17)	28	(18.7)
16-20 years	8	(5.6)	14	(9.3)
21-30 years	7	(4.9	10	(6.7)
Total	142	100.0	150	100.0

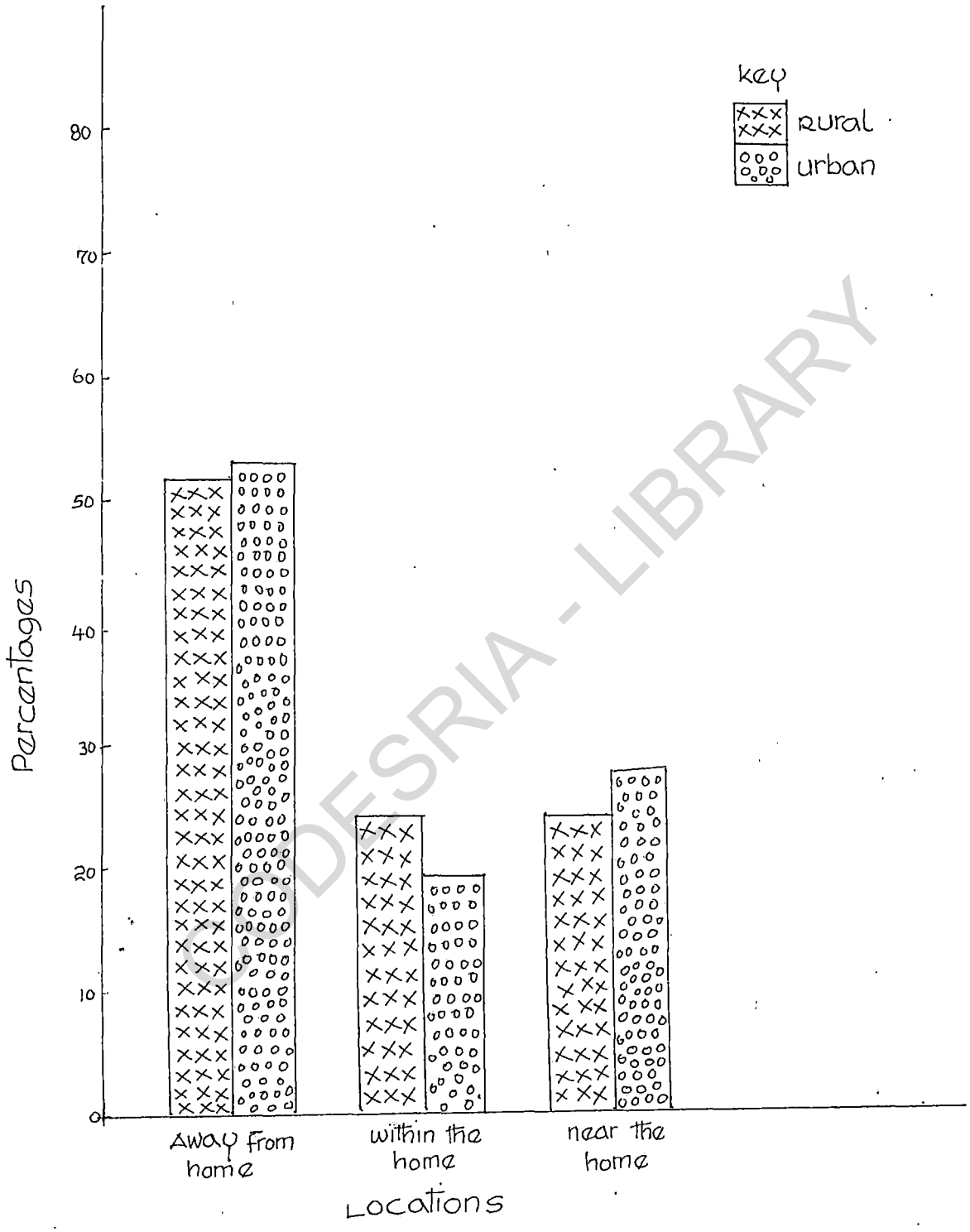


FIG. 4: LOCATION OF WORKPLACE

4.2.2 Distance of workplace, time of getting to Workplace and modes of getting to Workplace

Table 3A shows the distribution of the respondents by the distance of their workplaces. Fifty-nine percent (59.2%) of the rural women and 53.3% of the urban women cover a distance of 1-5km from home to their workplaces. None of the rural women cover above 10km to reach their places of work, only 4% of the urban women cover above 10km.

There were variations on the time spent by the respondents in getting to their places of work. Table 3B shows that 51.4% of the rural women spent a total of 21-40 minutes in getting to their workplaces while most of the urban women (78.7%) spent within 1-20 minutes on same activity. None of the rural women spent above 60 minutes in getting to their places of work while only 3.3% of the urban women spent such amount of time.

In terms of mode of getting to workplace, many of the rural women (59.2%) walked, while 44.7% of the urban women indicated getting to their workplaces by public transport. Other respondents in both areas went to work by personal cars or motor-cycles/bicycles as shown in Table 4A.

Table 3A: Distribution of the Women by the distance of their Workplace

Distance of Workplace	Rural		Urban	
	No.	%	No.	%
Less than 1km	55	(38.7)	49	(32.7)
1-5km	84	(59.2)	83	(55.3)
6-10km	3	(2.1)	12	(8)
Above 10km	-	-	6	(4)
Total	142	100.0	150	100.0

Table 3B: Time of getting to Workplaces by Respondents

Time	Rural		Urban	
	No.	%	No.	%
1-20 minutes	59	(41.6)	118	(78.7)
21-40 minutes	73	(51.4)	19	(12.7)
41-50 minutes	10	(7.0)	8	(5.3)
Above 60 minutes	-	-	5	(3.3)
Total	142	100.0	150	100.0

Table 4A: Distribution of the women according to their modes of getting to their workplaces

Mode of getting to workplace	Rural		Urban	
	No.	%	No.	%
Walking	84	(59.2)	47	(31.3)
Personal car	5	(3.5)	30	(20)
Public transport	18	(12.7)	67	(44.7)
Motor-cycle/bicycle	35	(24.6)	6	(4)
Total	142	100.0	150	100.0

Table 4B: Distribution of the women by duration of their breaktime

Duration of breaktime	Rural		Urban	
	No.	%	No.	%
Less than 30 minutes	5	(3.5)	3	(2)
30-35 minutes	23	(16.2)	61	(40.7)
36-60 minutes	94	(66.2)	74	(49.3)
Above 60 minutes	20	(14.1)	12	(8)
Total	142	100.0	150	100.0

4.2.3 Time Spent at Workplace and duration of Women's breaktime

There were variations in time spent by respondents at their workplaces daily as shown in Figure 5. None of the rural or urban respondents spend less than 5 hours at their workplaces daily. Forty-five percent (45.1%) of the rural women indicated that they spent 10 hours at their workplaces daily, while 38% of the urban women spent 8 hours.

Duration of breaktime of the working women studied are shown in Table 4B. Sixty-six percent (66.2%) of the rural and 49.3% of the urban respondents spent 36-60 minutes for breaktime. A few of the rural (3.5%) and urban (2%) respondents spent less than 30 minutes for breaktime.

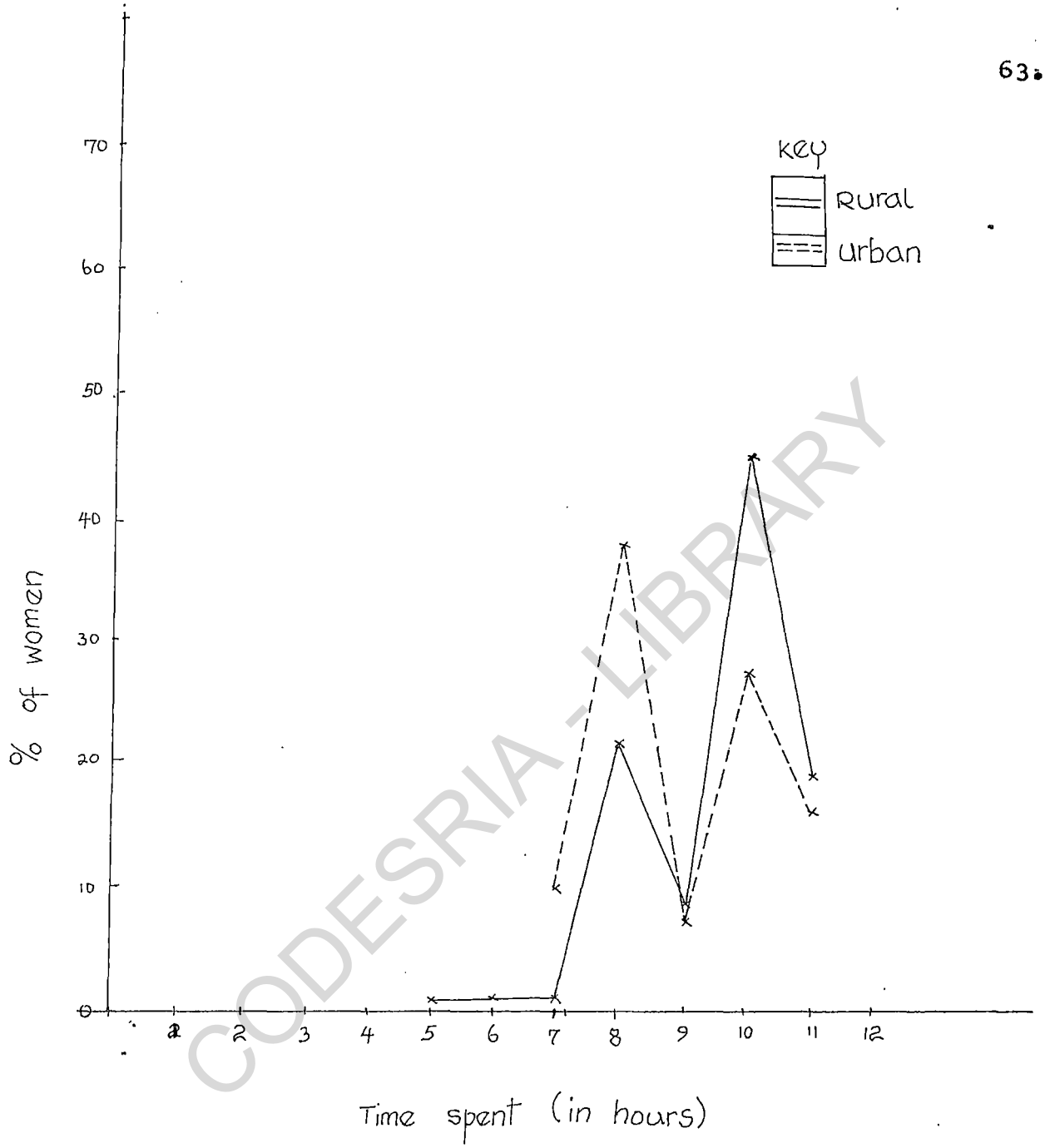


FIG. 5 : TIME SPENT AT WORKPLACES DAILY BY WOMEN

4.2.4 Types of work done by women and reasons for working part-time

The work duration of women studied are shown in Table 5. Many of the rural women (51.4%) did part-time work while most of their urban counterparts (92.7%) did full time work. The occupations of the part-time working women are shown in Table 6. Sixty-four percent (64.4%) of the rural respondents were engaged in farming, while those from the urban area were mainly involved in petty trading (27.3%) and farming (27.3%) too. Others were engaged in hair dressing, dress making and food sale/restaurant business.

Reasons given by these women for working part-time are shown in Table 7. Fifty-three percent (53.4%) of the rural and 45.5% of the urban women indicated that, it was the type of work they could secure. Only 5.5% of the rural and 18.2% of the urban women gave other reasons like: having the part time work on a seasonal basis.

Table 5: Distribution of the women according to work duration

Work duration	Rural		Urban	
	No.	%	No.	%
Full time	69	(48.6)	139	(92.7)
Part-time	73	(51.4)	11	(7.3)
Total	142	100.0	150	100.0

Table 6: Part-time occupation of the part-time working women

Occupations	Rural		Urban	
	No.	%	No.	%
Farming	47	(64.4)	3	(27.3)
Petty trading	15	(20.5)	3	(27.3)
Hair dressing	5	(6.8)	1	(9.1)
Food sale/restaurant business	2	(2.7)	2	(18.2)
Total	73	100.0	11	100.0

Table 7: Distribution of women according to their reasons for working part-time

Reasons for working part-time	Rural		Urban	
	No.	%	No.	%
To have enough time to care for children	23	(31.5)	3	(27.3)
It is the type of work I could secure	39	(53.4)	5	(45.5)
Husbands' wish	7	(9.6)	1	(9)
Other reasons e.g. the part-time work is done seasonally	4	(5.5)	2	(18.2)
Total	73	100.0	11	100.0

4.3 Household income categories

Table 8A shows the categories of respondents' monthly net income. Sixty-three percent (63.3%) of the rural respondents indicated that they earn between ₦350-₦600 monthly as net income while 52.7% of their urban counterparts earn between ₦650-₦950 monthly. Only 1.4% and 21.3% of the respondents from the rural and urban areas respectively, indicated that they earn ₦1000 and above monthly.

The husbands' monthly net income categories are shown in Table 8B. Fifty-seven percent (57.4%) of the rural women indicated that their husbands receive between ₦650-₦950 as monthly net income, same with 58.5% of the urban respondents. Few of the rural women (11%) indicated that their husbands earn about ₦1000 and above. However, 14% of the urban women indicated that their husbands earn between ₦350-₦600 monthly as net income.

Table 8A: Categories of the women's monthly net income

Income ranges	Rural		Urban	
	No.	%	No.	%
₦350 - ₦600	95	(63.3)	39	(26)
₦650 - ₦950	53	(35.3)	79	(52.7)
₦1000 and above	2	(1.4)	32	(21.3)
Total	150	100.0	150	100.0

Table 8B: Categories of husbands' monthly net income

Income ranges	Rural		Urban	
	No.	%	No.	%
₦350 - ₦600	43	(31.6)	20	(14)
₦650 - ₦950	78	(57.4)	83	(58.4)
₦1000 and above	15	(11)	39	(27.5)
Total	136	100.0	142	100.0

4.3.1 Sources of income of unemployed women and reasons for being unemployed

All the unemployed women in the study were from the rural area and they indicated their sources of income as shown in Table 9. Seventy-five percent (75%) of the respondents indicated that their source of income was through husbands' support while others (25%) indicated that their source was through extended family support.

Reasons given for being unemployed are shown in Table 10. Inability to secure employment was the reason given by 37.5% of the respondents. The reason given by 25% of the respondents was husbands' wish and to have enough time to care for children while 12.5% said it was "ill-health".

Table 9: Sources of income of unemployed women

Sources of income	Rural		Urban	
	No.	%	No.	%
Husbands' support	6	(75)	-	-
Extended family support	2	(25)	-	-
Total	8	100.0	-	-

Table 10: Distribution of women by reasons for being unemployed

Reasons for being unemployed	Rural		Urban	
	No.	%	No.	%
Inability to secure employment	3	(37.5)		
Husbands' wish	2	(25)		
To have enough time to care for children	2	(25)		
Others e.g. ill-health	1	(12.5)		
Total	8	100.0		

4.3.2 Household feeding pattern

Most of the rural (91.3%) and urban (95.3%) respondents indicated that they fed their families three times with snacks as shown in Table 11A. Others fed their families three times without snacks. On the frequency of feeding the pre-school children (2-5 years) in the respondents' families daily, 50.7% of the rural and 62% of the urban respondents fed their pre-school children four times daily. A few of the respondents, 7.3% and 12% from the rural and urban areas respectively indicated feeding their pre-school children for more than four times daily.

Table 12 shows the food items eaten by the "pre-schoolers" at the various meals (in a 24 hour recall). Cassava, yam and cereals were consumed by a lot of rural and urban households at various meals. However, legumes were consumed more by the urban respondents than their rural counterparts, for instance, legumes were eaten for breakfast by 28% of the urban women and 18% of the rural women. Legumes were eaten for lunch by 14% and 8.7% of the urban and rural women respectively. Again, legumes were consumed for supper by 14.7% of the urban and 8.8% of

the rural women. Other food items like vegetables, fruits and snacks were consumed by a small percentage of the households.

Table 11A: Frequency of feeding families daily

Frequency	Rural		Urban	
	No.	%	No.	%
3 times with snacks	137	(91.3)	143	(95.3)
3 times without snacks	13	(8.7)	7	(4.7)
Total	150	100.0	150	100.0

Table 11B: Frequency of feeding (2-5 year olds) in families daily

Frequency	Rural		Urban	
	No.	%	No.	%
3 times	63	(42)	39	(26)
4 times	76	(50.7)	93	(62)
More than 4 times	11	(7.3)	18	(12)
Total	150	100.00	150	100.0

Table 12: Major food items eaten by pre-schoolers at the various meals in a 24 hour recall

Food item	Percentage of households by meals					
	Breakfast		Lunch		Supper	
	Rural	Urban	Rural	Urban	Rural	Urban
	No. %	No. %	No. %	No. %	No. %	No. %
Cassava	27 (18)	6 (4)	54 (36)	34 (22.7)	52 (34.7)	32 (21.3)
Yam	30 (20)	31 (20.6)	14 (9.3)	22 (14.2)	20 (13.3)	19 (12.7)
Cocoyam	15 (10)	12 (8)	11 (7.3)	5 (3.3)	11 (7.3)	10 (6.7)
Cereals	20 (13.3)	32 (21.3)	12 (8)	20 (13.3)	18 (12)	24 (16)
Legumes	27 (18)	42 (28)	13 (8.7)	21 (14)	13 (8.8)	22 (14.7)
Vegetables	15 (10)	10 (6.7)	22 (14.7)	25 (16.6)	23 (15.3)	20 (13.3)
Fruits	11 (7.3)	10 (6.7)	18 (12)	13 (8.7)	8 (5.3)	15 (10)
Snacks	5 (3.3)	7 (4.7)	6 (4)	10 (6.7)	5 (3.3)	8 (5.3)
Total	150 100.0	150 100.0	150 100.0	150 100.0	150 100.0	150 100.0

4.3.3 Amount spent by households on feeding

Table 13 shows the amount spent by households for monthly feeding. Approximately forty-nine percent of the rural households spent between ₦400-₦600 on monthly feeding while 56.7% of the urban households indicated that they spent between ₦700-₦900. Only 5.3% of the rural and 19.3% of the urban women indicated that they spent ₦1000 and above for monthly feeding.

Almost all the respondents indicated making some contributions to their households monthly feeding as shown in Table 14A. Fifty-five percent of the rural and 56% of the urban women indicated that they contributed between ₦400-₦600. Only 4.7% of the urban women indicated that they contributed an amount as much as ₦1000 and above.

Table 14B shows the amount contributed by husbands for households monthly feeding. Forty-seven percent and 35.3% of the rural and urban women respectively, indicated that their husbands contributed between ₦400-₦600 towards their household monthly feeding. However, 16% of the rural and 16.7% of the urban respondents indicated that their husbands contributed nothing to their household monthly feeding.

Table 13: Amount spent by households for feeding monthly

Amount	Rural		Urban	
	No.	%	No.	%
₦400 - ₦600	73	(48.7)	36	(24)
₦700 - ₦900	69	(46)	85	(56.7)
₦1000 and above	8	(5.3)	29	(19.3)
Total	150	100.0	150	100.0

Table 14A: Amount contributed by women for monthly family feeding

Amount	Rural		Urban	
	No.	%	No.	%
Below ₦300	53	(35.3)	18	(12)
₦400 - ₦600	83	(55.3)	84	(56)
₦700 - ₦900	14	(9.4)	41	(27.3)
₦1000 and above	-	-	7	(4.7)
Total	150	100.00	150	100.0

Table 14B: Amount contributed by husbands for monthly family feeding

Amount	Rural		Urban	
	No.	%	No.	%
None	24	(16)	25	(16.7)
Below ₦300	32	(21.3)	37	(24.7)
₦400 - ₦600	71	(47.3)	53	(35.3)
₦700 - ₦900	14	(9.3)	23	(15.3)
₦1000 and above	9	(6.1)	12	(8)
Total	150	100.0	150	100.0

4.4 Child Care Pattern

Figure 6 shows the various types of substitute child caretakers utilised by women studied. All the respondents indicated using one form of child caretaker. Approximately, twenty-seven percent of the rural women utilised househelps as their child caretakers, same with 44.7% of those from the urban area. Other types of substitute child caretakers utilised by the respondents include: older children/ siblings, sister, brother, mother, mother-in-law and nannies.

None of the rural women indicated utilising the services of nannies while only 8.6% of those from the urban area utilised such services.

On the ages of child caretakers utilised by the respondents, 65.3% of the rural women utilised child caretakers below 18 years of age, while 56% of the urban women follow same pattern as shown in Table 15. Others utilised child caretakers above 18 years of age. However, two-year old children taken care of, by child caretakers above 18 years had better weight for height measurements than those cared for, by child caretakers below 18 years in both urban and rural areas (urban -

49.3: 33.3%, p $\not<$ 0.05 and rural - 44: 25%, p $\not<$ 0.05) (appendix Table 5.6).

Table 15: Ages of child caretakers utilised by women

Age	Rural		Urban	
	No.	%	No.	%
Below 18 years	98	(65.3)	84	(56)
Above 18 years	52	(34.7)	66	(44)
Total	150	100.0	150	100.0

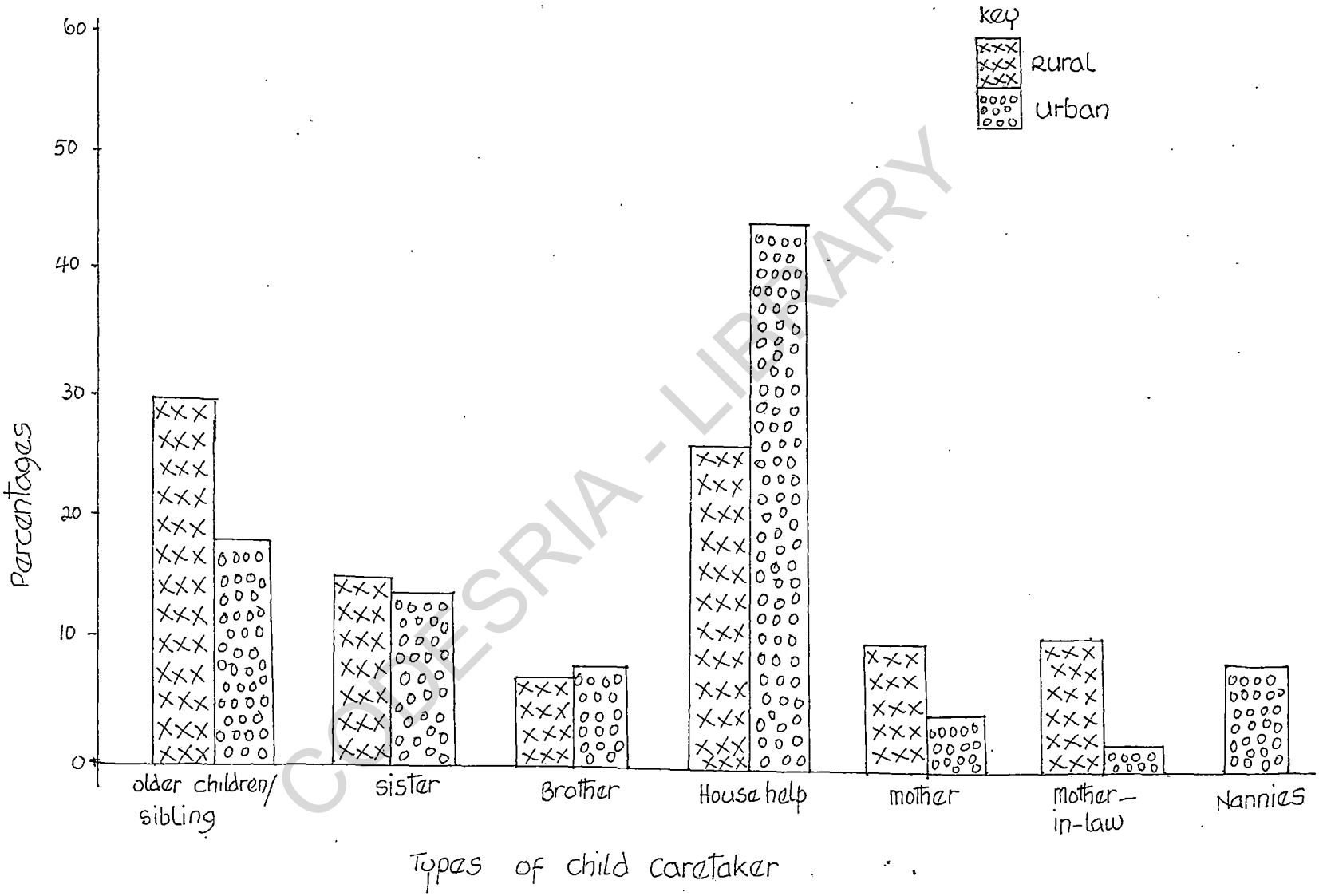


FIG. 6 : TYPES OF CHILD CARETAKER UTILIZED BY WOMEN

4.4.1 Educational status and working experience of child caretakers

Child caretakers utilised by the respondents attained various levels of educational status as shown in Table 16. Forty-five percent of child caretakers utilised by the rural women did not complete elementary school, while 40.7% of those utilised by the urban women completed elementary school. Ten percent and 2.7% of child caretakers from the rural and urban areas respectively, had no formal education. Others had the General Certificate of Education (GCE) and other higher educational attainment.

There were variations on the working experiences of child caretakers utilised by the respondents as shown in Table 17. Forty-six percent of those from the rural area had 4-6 years of experience, same with 50.6% from the urban area. Others had working experiences ranging from 1-3 years, 7-10 years and 11 years and above.

Table 16: Educational status of child caretakers

Educational status	Rural		Urban	
	No.	%	No.	%
No formal education	15	(10)	4	(2.7)
Elementary school uncompleted	68	(45.3)	51	(34)
Elementary school completed	50	(33.3)	61	(40.7)
WASC/GCE/SSCE and above	17	(11.4)	34	(22.6)
Total	150	100.0	150	100.0

Table 17: Working experience of child caretakers

Years of experience	Rural		Urban	
	No.	%	No.	%
1-3 years	36	(24)	22	(14.7)
4-6 years	76	(46.7)	76	(50.6)
7-10 years	18	(12)	37	(24.7)
11 years and above	26	(17.3)	15	(10)
Total	150	100.0	150	100.0

4.4.2 Quality of child caretakers utilised by women

Table 18 shows the responses of women on the quality of their child caretakers. Responding on the frequency of exhibiting certain specified "quality" attributes by the child caretakers, most of the rural respondents indicated "atimes" while most of their urban counterparts indicated "always". On the quality of "liking to stay with children", 60.7% of the rural women responded "atimes" while 39.3% indicated "always". Responding on this same quality, 46% of the urban women indicated "atimes" while 54% indicated "always". Other quality attributes responded to by the women include: being patient with children, understanding the interests and needs of children and loving children.

Responses of women on the availability of formal child day-care centres in their areas are shown in Table 19A. All urban (100%) and most of the rural (92%) respondents indicated that formal child day-care centres were available in their areas. Only 8% of the rural respondents indicated that formal child day-care centres were not available in their area.

Table 19B shows their responses on the utilisation of the services of formal child day-care centres. Sixty-two percent of the rural and 90% of the urban respondents indicated that they utilised the services of formal child day-care centres. However, only 38% and 10% of the rural and urban respondents respectively, indicated that they do not utilise such services.

Table 18: Responses on the quality of child caretakers employed

Quality of child caretaker	Rural				Urban			
	Atimes		Always		Atimes		Always	
	No.	%	No.	%	No.	%	No.	%
Likes to stay with children	91	(60.7)	59	(39.3)	69	(46)	81	(54)
Is patient with children	102	(68)	48	(32)	61	(40.7)	89	(59.3
Understands the interest and needs of children	82	(54.7)	68	(45.3)	63	(42)	87	(58)
Loves children	59	(39.3)	91	(60.7)	56	(37.3)	94	(62.7
Total	150	100.0	150	100.0	150	100.0	150	100.0

Table 19A: Availability of formal child day-care centres in both sectoral zones

Availability of formal child day-care centres	Rural No.	Rural %	Urban No.	Urban %
Yes	138	(92)	150	(100)
No	12	(8)	-	-
Total	150	100.0	150	100.0

Table 19B: Responses on the utilisation of the services of formal child day-care centres

Utilisation of the services of formal child day-care centres	Rural		Urban	
	No.	%	No.	%
Yes	93	(62)	135	(90)
No	57	(38)	15	(10)
Total	150	100.0	150	100.0

4.5 Nutrition knowledge and practice of women

Levels of performance in the nutrition knowledge and practice test is presented in Table 20, according to sectoral zones of respondents. Scores on the table indicate that the urban respondents performed better than their rural counterparts. Fifty-seven percent of the rural women had low scores (below 35%) while 54.7% of the urban women had high scores of (100 - 75%). Only 12% of the rural respondents had high scores while 16.6% of the urban respondents had low scores on the other hand.

The overall performance in the nutrition knowledge and practice test of the urban women was just average, mean score being 15.7 as opposed to 9.65 (out of 24 points) scored by their rural counterparts. Thus, the nutrition knowledge and practice of urban women were significantly better thatn those of rural women ($p < 0.05$) (appendix table 5.3).

Table 20: Scores on nutrition knowledge and practice test of women

% Range	Score Ranges	Rural		Urban	
		No.	%	No.	%
100-75	24-16 points	18	(12)	82	(54.7)
74-35	15-9 points	46	(30.7)	43	(28.7)
Under 35	8-0 points	86	(57.3)	25	(16.6)
Total		150	100.0	150	100.0

4.6 Time allocation of Women

Table 21A shows the time allocation of the rural and urban women studied. The activities were grouped into work related/income generating, household, non work/leisure and voluntary activities. Time budget of households in the rural and urban areas showed that they spent most of their time on work related or income generating activities and some household activities such as food preparation as shown in Figures 7 and 8.

A lot of time was spent on the non work/leisure activities, especially sleeping/resting which took the rural women (6.30 hours/day) and the urban women (7.25 hours/day). The rural women spent a lot of time on activities such as food preparation (2.20 hours/day), fetching water (1.10 hours/day), fetching firewood (1.05 hours/day) and washing clothes (0.85 hours/day). Less time was remarkably spent on activities like child care (0.61 hours/day) and sweeping/cleaning the house (0.28 hours/day) etc.

However, the urban women spent less time on activities such as fetching water (0.60 hours/day) and fetching firewood or fuel (0.42 hours/day), when compared to time spent on these activities by their rural counterparts. Since the respondents spent much time on work related or income generating, household and non work/leisure activities; less time was spent on voluntary activities.

Table 21A: Mean time (in hours) allocated by women to various activities within 24 hours

Activities	Rural	Urban	Difference	Average
Work-related time				
Preparation for work	0.28	0.32	- 0.04	0.30
Time to and from work	0.75	0.50	+ 0.25	0.63
Actual work time	7.00	6.00	+ 1.00	6.50
Household activities				
Food preparation	2.20	2.36	- 0.16	2.28
Food processing	0.30	0.55	- 0.25	0.43
Feeding the child	0.41	0.45	- 0.04	0.43
Bathing/dressing child	0.20	0.33	- 0.13	0.27
Sweeping/cleaning the house	0.28	0.37	- 0.09	0.33
Washing clothes	0.85	0.92	- 0.07	0.88
Fetching water	1.10	0.60	+ 0.50	0.85
Getting fuel/firewood	1.05	0.42	+ 0.63	0.74
Shopping	0.55	0.50	+ 0.05	0.52
Non-work/leisure activities				
Eating	0.81	0.75	+ 0.06	0.78
Sleeping/resting	6.30	7.25	- 0.95	6.77
Recreation	0.92	1.35	- 0.43	1.13
Voluntary activities				
Visiting/receiving visitors	0.58	0.75	- 0.17	0.66
Religious activities	0.42	0.58	- 0.16	0.50
Total	24.00	24.00		24.00

FIG. 7 : MEAN TIME ALLOCATION OF URBAN AND RURAL WOMEN TO VARIOUS ACTIVITIES

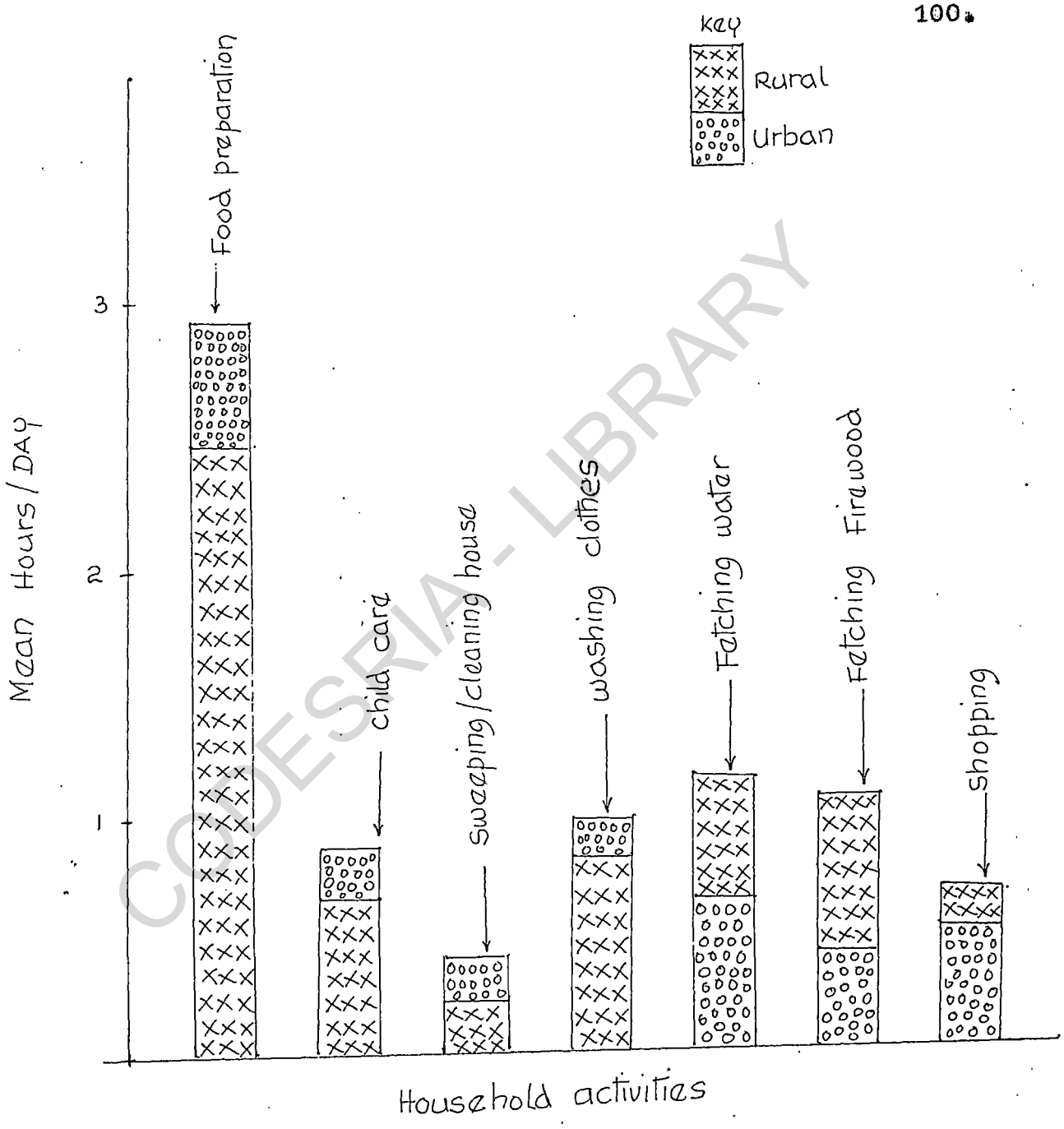


FIG. 8 : MEAN TIME ALLOCATED TO VARIOUS HOUSEHOLD ACTIVITIES BY RURAL AND URBAN WOMEN

4.6.1 Time allocation of women in various occupations

The mean time spent on various activities per day, by women in various occupations are shown in Table 21B. None of the working women spent less than 8 hours on work related or income generating activities. The self-employed women allocated the highest amount of time (10.25 $\pm$ 1.91 hours) to work related activities. The bank staff and private industry/company staff also spent (9.42 $\pm$ 0.76 and 9.58 $\pm$ 0.92 hours) respectively on same activity. However, the unemployed women spent the least time (2.75 $\pm$ 0.28 hours) on work related or income generating activities. These periods were recorded on a community market day when some of the unemployed women made some occasional sales.

In terms of household activities, the least time (3.70 $\pm$ 0.74 hours) was allocated to this activity by the bank staff. A total of (4.51 $\pm$ 0.90 hours) was also allocated to this same activity by the self-employed women. Unemployed women allocated the highest amount of time (11.91 $\pm$ 1.17 hours) to household activities.

Amount of time allocated to the non work/leisure activities by the respondents was quite high. Sleeping/resting was the non work/leisure activity in which most of the respondents spent a lot of time. None of the respondents in various occupations spent less than seven hours on non work/leisure activities. Since the respondents spent most of their time on work related, or income generating, household and non work/leisure activities, less time was spent on voluntary activities. However, the school teachers and hospital staff spent the highest amount of time (1.03 $\pm$ 0.29 hours and 1.35 $\pm$ 0.25 hours) respectively, on voluntary activities. Respondents in other occupations spent less than 1.00 hour on voluntary activities per day. The individual mean time allocated to various activities within 24 hours by women in various occupations were shown in Tables 22 - 29.

Table 21B: Mean time spent on various activities per day by women in various occupations (Time in hours)

Occupational group	Work-related /income generating activities	Household activities	Non-work/ leisure activities	Voluntary activities	Total Time
School teachers	8.45±0.15	5.09±0.72	9.43±0.74	1.03±0.29	24.00
Civil servants	8.33±0.35	5.63±0.43	9.21±0.23	0.83±0.32	24.00
Bank staff	9.42±0.76	3.70±0.74	9.99±0.67	0.89±0.15	24.00
Hospital staff	8.59±0.45	6.51±1.09	7.55±0.66	1.35±0.25	24.00
Government-owned industry/company staff	8.66±0.39	5.17±0.78	9.42±0.51	0.75±0.18	24.00
Private industry /company staff	9.58±0.92	5.62±0.66	8.58±0.78	0.22±0.41	24.00
Self-employed	10.25±1.91	4.51±0.90	8.49±0.59	0.75±0.31	24.00
Unemployed	2.75±0.28	11.91±1.17	9.17±0.62	0.17±0.39	24.00

Table 22: Mean time allocated to various activities within 24 hours by school teachers

Activities	Time in Hours
Work-related time	
Preparation for work	0.53±0.06
Time to and from work	0.50±0.04
Actual work time	7.42±0.05
Household activities	
Food preparation	2.25±0.10
Bathing/dressing child	0.42±0.12
Feeding child	0.33±0.05
Sweeping/cleaning the home	0.56±0.15
Washing clothes	0.58±0.02
Shopping	0.55±0.15
Gardening	0.40±0.13
Non-work/leisure activities	
Eating	1.13±0.22
Sleeping/resting	7.34±0.20
Recreation/conversation	0.63±0.17
Reading	0.33±0.15
Voluntary activities	
Visiting/receiving visitors	0.58±0.20
Religious activities	0.45±0.09
Total	24.00

Table 23: Mean time allocated to various activities within 24 hours by hospital staff

Activities	Time in Hours
Work-related time	
Preparation for work	0.67±0.14
Time to and from work	0.42±0.18
Actual work time	7.50±0.13
Household activities	
Food preparation	2.23±0.17
Bathing/dressing the child	0.50±0.25
Feeding child	0.75±0.12
Sweeping/cleaning the home	0.58±0.28
Washing clothes	1.20±0.15
Shopping	1.25±0.12
Non-work/leisure activities	
Eating	0.33 ±0.37
Sleeping	7.22 ±0.29
Voluntary activities	
Social visits	0.75 ±0.16
Religious activities	0.60 ±0.09
Total	24.00

Table 24: Mean time allocated to various activities within 24 hours by private industry/company staff

Activities	Time in Hours
Work-related time	
Preparation for work	0.58±0.28
Time to and from work	0.50±0.29
Actual work time	8.50±0.35
Household activities	
Food preparation	2.42±0.13
Bathing/dressing child	0.45±0.05
Feeding child	0.33±0.06
Sweeping/cleaning the home	0.47±0.10
Washing clothes	0.83±0.06
Shopping	0.62±0.11
Gardening	0.50±0.15
Non-work/leisure activities	
Eating	1.08±0.19
Sleeping/resting	7.00±0.25
Watching TV/News	0.50±0.34
Voluntary activities	
Visiting/receiving visitors	0.22±0.41
Total	24.00

Table 25: Mean time allocated to various activities within 24 hours by Government-owned industry/company staff

Activities	Time in Hours
Work-related time	
Preparation for work	0.58±0.12
Time to and from work	0.58±0.18
Actual work time	7.50±0.09
Household activities	
Food preparation	2.25±0.17
Bathing/dressing child	0.67±0.06
Feeding child	0.50±0.18
Sweeping/cleaning the home	0.75±0.10
Gardening	0.80±0.12
Fetching water	0.20±0.15
Non-work/leisure activities	
Eating	1.20±0.16
Sleeping/resting	7.39±0.15
Watching TV/News	0.83±0.20
Voluntary activities	
Visiting/receiving visitors	0.33±0.07
Religious activities	0.42±0.11
Total	24.00

Table 26: Time budget of women working in the civil service

Activities	Time in Hours
Work-related time	
Preparation for work	0.58±0.05
Time to and from work	0.75±0.23
Actual work time	7.00±0.07
Household activities	
Food preparation	2.53±0.10
Sweeping/cleaning the home	0.50±0.05
Bathing/dressing the child	0.42±0.07
Washing clothes	1.17±0.06
Fetching water	0.25±0.02
Food processing	0.58±0.05
Gardening	0.18±0.08
Non-work/leisure activities	
Eating	1.00±0.04
Sleeping/resting	7.13±0.08
Watching TV	0.75±0.05
Reading	0.33±0.06
Voluntary activities	
Religious activities	0.50±0.17
Visiting/receiving visitors	0.33±0.15
Total	24.00

Table 27: Mean time allocated to various activities within 24 hours by women working in banks

Activities	Time in Hours
Work-related time	
Preparation for work	0.50±0.33
Time to and from work	0.42±0.26
Actual work time	8,50±0.17
Household activities	
Food preparation	1.58±0.13
Bathing/dressing child	0.53±0.08
Feeding child	0.60±0.21
Sweeping/cleaning the home	0.45±0.17
Shopping	0.54±0.15
Non-work/leisure activities	
Eating	1.20±0.11
Sleeping/resting	7.42±0.16
Watching TV/News	0.75±0.15
Recreation	0.62±0.25
Voluntary activities	
Social visits	0.47±0.08
Religious activities	0.42±0.07
Total	24.00

Table 28: Mean time allocated to various activities within 24 hours by self-employed women

Activities	Time in Hours
Work-related time	
Preparation for work	0.75±0.48
Time to and from work	0.50±0.31
Actual work time	9.00±1.12
Household activities	
Food preparation	2.10±0.10
Bathing/dressing child	0.33±0.17
Feeding children	0.42±0.17
Sweeping/cleaning the home	0.75±0.13
Shopping	0.58±0.15
Fetching water	0.33±0.18
Non-work/leisure activities	
Eating	1.07±0.31
Sleeping/resting	7.42±0.28
Voluntary activities	
Visiting/receiving visitors	0.33±0.15
Religious activities	0.42±0.16
Total	24.00

Table 29: Mean time allocated to various activities within 24 hours by unemployed women

Activities	Time in Hours
Work-related time	
Preparation for work	-
Time to and from work	-
Actual work time (occational sale on market day)	2.75±0.28
Household activities	
Food preparation	3.05±0.12
Bathing/dressing child	0.53±0.12
Feeding child	0.50±0.15
Sweeping/cleaning the home	0.70±0.17
Fetching/chopping firewood	1.50±0.23
Fetching water	1.13±0.18
Gardening	1.67±0.09
Food processing	2.83±0.11
Non-work/leisure activities	
Eating	1.42±0.23
Sleeping/resting	7.75±0.39
Voluntary activities	
Religious activities	0.17±0.39
Total	24.00

4.7 Anthropometric Measurements

Anthropometric measurements of 504 pre-school children (235 and 269 children from the rural and urban areas respectively), compared with NCHS standard values are shown in Table 30.

Generally, there were distinct sectoral differences in anthropometric measurements of children studied. There were more stunted (58.72%), wasted (37.5%) and underweight (171%) children in the rural area when compared with urban children with (39%, 9.7% and 8.2%) of same cases respectively.

Looking also at the prevalences of malnutrition by ages of children, their anthropometric measurements revealed same pattern; more stunting and less of wasting and underweight.

Using the weight for age index as shown in Table 30, (8.2%) of the urban children were malnourished as opposed to 17% from the rural area. Rural children of various age groups had higher percentages of malnourished individuals, having 24.4%, 12.3%, 20.9% and 13.75% for two, three, four and five

year old children as opposed to urban children who had 11.3%, 6.8%, 9.2% and 6.8% respectively as shown in Table 31.

Using the weight for height index, 10% of the urban children were malnourished as opposed to 37% from the rural area. On using the weight for height index on children of various age groups (2-5 years), a greater proportion of the rural children were malnourished when compared with the urban children except in the case of four year olds from the urban area.

Pearson's correlation coefficient showed that the anthropometric measurements had some relationship with the weighed food intake of children studied. Thus, weight and height measurements of children studied correlated positively with their protein intakes in both urban and rural locations, urban ($r = 0.7905$; $p < 0.05$) for weight and $r = 0.8434$; $p < 0.05$ for height. As regards the rural area, ($r = 0.7487$; $p < 0.05$) for weight while height ($r = 0.8187$; $p < 0.05$) respectively). Weight of the urban children also correlated positively with the height of the children ($r = .9658$; $p < 0.05$) (appendix Table 5.8).

Table 30: Anthropometric measurements of urban and rural children compared with NCHS standard values

Sector	No. of Children	Nutrition Status Indicator					
		Weight/Age		Height/Age		Weight/Height	
		Normal	Malnourished	Normal	Malnourished	Normal	Malnourished
Urban	269	247 (91.8)	22 (8.2)	164 (61)	105 (39)	243 (90)	26 (10)
Rural	235	195 (83)	40 (17)	97 (41.3)	138 (58.72)	147 (63)	88 (37)

115-117.

Table 31: Anthropometric measurements of children by age groups compared with NCHS standard values

Age	Sector	No. of Children	Nutritional Status Indicator: Weight/Age Normal	Weight/Age Malnourished	Height/Age Normal	Height/Age Malnourished	Weight/Height Normal	Weight/Height Malnourished
2 year olds	Rural	45	34 (75.6)	11 (24.4)	18 (40)	27 (60)	32 (71)	13 (29)
	Urban	65	55 (88.7)	7 (11.3)	27 (43.5)	35 (56.5)	57 (92)	5 (8)
3 year olds	Rural	73	64 (87.7)	9 (12.3)	48 (65.8)	25 (34.2)	48 (65.8)	25 (34.2)
	Urban	59	57 (96.6)	4 (6.8)	40 (67.8)	19 (32.2)	54 (92)	5 (8)
4 year olds	Rural	43	34 (79.1)	9 (20.9)	11 (25.6)	32 (74.4)	36 (83.7)	7 (16.3)
	Urban	54	49 (90.8)	5 (9.2)	32 (59.3)	22 (40.7)	34 (63)	20 (37)
5 year olds	Rural	80	69 (86.25)	11 (13.75)	40 (50)	40 (50)	50 (62.5)	30 (37.5)
	Urban	88	82 (93.2)	6 (6.8)	45 (51.1)	43 (48.9)	79 (89.8)	9 (10.2)

4.7.1 Anthropometric measurements of children of mothers in various occupations

Anthropometric measurements of children according to mothers' work, compared with NCHS standard values are shown in Table 32. These mothers of pre-school children work as school teachers, civil servants, bank staff, hospital staff, government-owned industry/company staff, private industry/company staff and the self-employed.

Using the weight for age index, some of the children were malnourished while a greater number were normal. On using the height for age index, a greater proportion of malnourished children were recorded. Such high rates of stunting was observed on 68% of children belonging to mothers working in government-owned industries/companies and 57% of those working in private industries/companies.

The weight for height index also revealed that (25.8% and 25%) of the malnourished children were from self-employed mothers and those working in hospitals, respectively. However, women in paid employment produced children with significantly higher weight for height (43%) than the self-employed

(35%) ($p < 0.05$) (appendix Table 5.4).

Anthropometric measurements of children of mothers working in various locations compared with NCHS standard values are shown in Table 33. Working women were classified as working away from home, within the home and near the home. Using the weight for age index, more of the malnourished children were from the rural area while less came from the urban area. Twenty percent (20.4%) of malnourished children were those of the rural women working within the home.

On using the height for age index, a lot of malnourished children were recorded. Seventy-one percent (71.2%) of the malnourished children in this category were from the rural women working near the home, while 29.3% of the malnourished children were those of urban women working away from home.

However, the weight for height index showed that 53.1% of the malnourished children were from rural women working within the home, while least of the malnourished children (6.4%) were from urban mothers working away from home. Specifically, two-year old children of women employed at or near the home had significantly better weight for height than those of

women working away from home in both urban and rural areas (urban - 45: 36%, rural - 41.7: 20.8%, p / 0.05) (appendix Table 5.5).

Table 34 shows the anthropometric measurements of children of full time and part-time working women compared with NCHS standard values. Weight for height index showed that the part-time working women had more malnourished children on the whole, thus (urban - 35.9%, rural - 13.6%) as opposed to full time working women who had (urban - 4.9%, rural - 4%) of malnourished children. The height for age index showed that many of the children were malnourished. On using the weight for height index, the overall percentages of malnourished children from part-time working women were (urban, 50%; rural 34.2%) and for full time working women (urban - 6.1%; rural - 42.2%).

Table 32: Anthropometric measurements of children according to mother's work compared with NCHS standard values

Mothers' Work	No. of Children	Nutritional Status Indicator: Weight/Age		Height/Age		Weight/Height	
		Normal	Malnourished	Normal	Malnourished	Normal	Malnourished
School Teachers	55	50 (91)	5 (9)	28 (51)	27 (49)	46 (84)	9 (16)
Civil Servants	46	41 (89.13)	5 (10.87)	25 (54)	21 (46)	39 (84.8)	7 (15.2
Bank staff	25	21 (84)	4 (16)	19 (76)	6 (24)	21 (84)	4 (16)
Hospital staff	52	46 (88.46)	6 (11.54)	35 (67)	17 (33)	39 (75)	13 (25)
Private Industries/ companies staff	42	36 (85.7)	6 (14.3)	18 (43)	24 (57)	33 (79)	9 (21)
Government-owned Industries/ Companies staff	63	59 (93.6)	4 (6.4)	20 (32)	43 (68)	49 (77.8)	14 (22.2
Self-employed	209	179 (86)	30 (14)	109 (52.15)	100 (47.85)	155 (74.2)	54 (25.8
Unemployed	12	10 (83.3)	2 (16.7)	7 (58)	5 (42)	8 (67)	4 (33)
Total	504						

Table 33: Anthropometric measurements of children of women working in various locations compared with NCHS standard values

Location of Workplace	Sectoral Zone	No. of Children	Nutritional Status Indicator: Weight/Age		Height/Age		Weight/Age	
			Normal	Malnourished	Normal	Malnourished	Normal	Malnourished
Away from home	Rural	134	117 (87.3)	17 (12.7)	55 (41)	79 (59)	100 (74.6)	34 (25.4)
	Urban	140	131 (93.6)	9 (6.4)	99 (70.7)	41 (29.3)	131 (93.6)	9 (6.4)
Within the home	Rural	49	39 (79.6)	10 (20.4)	28 (57.1)	21 (42.9)	23 (46.9)	26 (53.1)
	Urban	39	32 (82.1)	7 (17.9)	26 (66.7)	13 (33.3)	33 (84.6)	6 (15.4)
Near the home	Rural	52	39 (75)	13 (25)	15 (28.8)	37 (71.2)	36 (69.2)	16 (30.8)
	Urban	74	70 (94.6)	4 (5.4)	27 (36.5)	47 (63.5)	66 (89.2)	8 (10.8)

Table 34: Anthropometric measurements of children of full-time and part-time working women compared with NCHS standard values

Type of Work	Sectoral Zone	No. of Children	Nutritional Status Indicator: Weight/Age		Height/Age		Weight/Height	
			Normal	Malnourished	Normal	Malnourished	Normal	Malnourished
Full time	Rural	102	97 (95.1)	5 (4.9)	35 (34.3)	67 (65.7)	59 (57.8)	43 (42.2)
	Rural	247	237 (96)	10 (4)	169 (68.4)	78 (31.6)	232 (93.9)	15 (6.1)
Part Time	Rural	117	75 (64.1)	42 (35.9)	39 (33.3)	78 (66.7)	77 (65.8)	40 (34.2)
	Urban	22	19 (86.4)	3 (13.6)	7 (31.8)	15 (68.2)	11 (50)	11 (50)

4.7.2 Anthropometric measurements of children from various household income groups

Table 35 shows the anthropometric measurements of children according to household income groups, compared with NCHS standard values. On using the weight for age index, the highest percentage of malnourished children (20.5%) were from rural mothers in the middle income group. Also the least percentage of malnourished children (2.4%) were those from urban mothers in the high income group. Using the height for age index, the highest percentage of malnourished children (73%) were from the rural middle income mothers while the least percentage of malnourished children (20%) were from the rural high income households.

However, the weight for height index showed that the rural low income mothers had the highest percentage (40.5%) of malnourished children while the urban high income mothers had the least percentage (4.8%) of malnourished children. Effect of household income level on child nutritional status was further tested using the anthropometric data of children studied.

Findings showed that height of 2-5 year old children from high income households were significantly different from those of other income groups ($p < 0.05$). Children from high income households had significantly higher weight for height measurements than those from low income households ($p < 0.05$) (appendix Table 5.7).

Table 35: Anthropometric measurements of children according to household income groups compared with NCHS standard values

Household Income Groups	Sectoral Zone	No. of Children	Nutritional Status Indicator					
			Weight/Age		Height/Age		Weight/Height	
			Normal	Malnourished	Normal	Malnourished	Normal	Malnourished
High Income	Urban	83	81 (97.6)	2 (2.4)	55 (66.3)	28 (33.7)	79 (95.2)	4 (4.8)
	Rural	5	3 (60)	2 (40)	4 (80)	1 (20)	3 (60)	2 (40)
Middle Income	Urban	112	102 (91.1)	10 (8.9)	71 (63.4)	41 (36.6)	102 (91)	10 (9)
	Rural	73	58 (79.5)	15 (20.5)	20 (27)	53 (73)	54 (74)	19 (26)
Low Income	Urban	68	58 (85.3)	10 (14.7)	32 (47.1)	36 (52.9)	55 (80.8)	13 (19.2)
	Rural	163	140 (85.9)	23 (14.1)	79 (48.5)	84 (51.5)	97 (59.5)	66 (40.5)

4.7.3: Anthropometric measurements of children cared for, by various types of child caretakers

Table 36 shows the anthropometric measurements of children cared for by various types of child caretakers, compared with NCHS standard values. The results revealed same trend of; more stunting and less of wasting and underweight. On using the weight for age index, the highest percentage of malnourished children (24.2%) were those cared for, by the househelps from the rural area. The least percentage of malnourished children (6.5%) were those cared for, by the urban older children/siblings child caretakers.

While using the height for age index, higher percentages of malnourished children were recorded. Approximately, seventy-nine percent and 64.3% of malnourished children were those cared for by sister and mother-in-law child caretakers respectively, from the rural area.

However, on using the weight for height index, the highest percentages of malnourished children (55%) were those cared for, by grandmother child-caretakers in the rural area. The least percentage of malnourished

children (3.8%) were those cared for by nannies from the urban sector. Two-year old children taken care of by child caretakers above 18 years had better weight for height measurements than those cared for by child caretakers below 18 years in both urban and rural areas (urban - 49.3% : 33.3% and rural - 44% : 25%, $p < 0.05$) (appendix Table 5.6).

Table 36: Anthropometric measurements of children cared for by various types of child caretakers compared with NCHS standard values

Type of Child Care-Taker	Sectoral Zone	No. of Children	Nutritional Status Indicator: Weight/Age Normal	Weight/Age Malnourished	Height/Age Normal	Height/Age Malnourished	Weight/Height Normal	Weight/Height Malnourished
Older Children /Siblings	Urban	46	43 (93.5)	3 (6.5)	26 (56.5)	20 (43.5)	41 (89.1)	5 (10.9)
	Rural	78	66 (84.6)	12 (15.4)	32 (41)	46 (59)	54 (69.2)	24 (30.8)
Sister	Urban	37	34 (91.9)	3 (8.1)	22 (59.5)	15 (40.5)	32 (86.5)	5 (13.5)
	Rural	33	28 (84.8)	5 (15.2)	7 (21.2)	26 (78.8)	18 (54.5)	13 (45.5)
Brother	Urban	17	15 (88.2)	2 (11.8)	10 (58.8)	7 (41.2)	15 (88.2)	2 (11.8)
	Rural	14	-	-	-	-	-	-
House-help	Urban	127	117 (92.1)	10 (7.9)	76 (59.8)	51 (40.2)	116 (91.3)	11 (8.7)
	Rural	62	47 (75.8)	15 (24.2)	32 (51.6)	30 (48.4)	40 (64.5)	22 (35.5)
Grand-mother	Urban	12	11 (91.7)	1 (8.3)	9 (75)	3 (25)	11 (91.7)	1 (8.3)
	Rural	20	18 (90)	2 (10)	8 (40)	12 (60)	9 (45)	11 (55)
Mother-in-law	Urban	4	3 (75)	1 (25)	2 (50)	2 (50)	3 (75)	1 (25)
	Rural	28	26 (92.9)	2 (7.1)	10 (35.7)	18 (64.3)	17 (60.7)	11 (39.3)
Nannies	Urban	26	24 (92.3)	2 (7.7)	19 (73.1)	7 (26.9)	25 (96.2)	1 (3.8)
	Rural	-	-	-	-	-	-	-
	Total	504						

4.8 Clinical signs and incidence of illness

More cases of the clinical signs of malnutrition were observed among the rural children as opposed to urban children as shown in Table 37. As many as 26 cases of dental caries and 12 cases of hair changes were seen in the rural area as opposed to 9 and 5 cases respectively, seen in the urban area. Other clinical signs observed were that of angular stomatitis and bitots spot.

Table 38 also shows the incidence of illness within the last six months of the survey period. The findings also revealed more cases of illness in the rural than the urban area. However, about 202 cases of cough were recorded in the rural area while 239 cases were recorded in the urban area. Again, 153 cases of fever were recorded in the rural area while 98 cases were recorded in the urban area. Other types of illness recorded included diarrhoea, measles and malaria with 21.3%, 1.28% and 9.79% in the rural and 13.0%, 0.74% and 5.58% in the urban areas respectively.

Table 37: Number of children exhibiting clinical signs of malnutrition

Clinical signs observed	Rural (Total number of children = 235)		Urban (Total number of children = 269)	
	No. of Cases	%	No. of Cases	%
Angular stomatitis	5	(2.13)	3	(1.12)
Bitot's spot	5	(2.13)	2	(0.74)
Hair changes	12	(5.11)	5	(1.86)
Dental caries	26	(11.06)	9	(3.35)

Table 38: Incidence of illness among the 2-5 year old children

Types of illness	Rural (Total number of children = 235)		Urban (Total number of children = 269)	
	No. of Cases	%	No. of Cases	%
Diarrhoea	50	(21.3)	35	(13.0)
Cough	202	(85.9)	239	(88.8)
Fever	153	(65.1)	98	(36.4)
Measles	3	(1.28)	2	(0.74)
Malaria	23	(9.79)	15	(5.58)

4.9 Dietary intake data
Intake and Adequacy of nutrients

The mean values and standard deviations of intakes of the nine nutrients calculated are shown in Tables 39 and 40. Also shown are the percentages of intake compared with WHO (1970), WHO (1973) and FAO/WHO/UNU (1985) recommendations for children in different age groups. Individual mean intakes of the nutrients are shown in appendix 4.

4.9.1 Energy intake and Adequacy

Mean energy intake was below the FAO/WHO/UNU (1985) recommendations for all age groups as shown in Tables 39 and 40. As regards the rural children, the group that met 60% of their requirement values were the two-year olds with mean intake of 3.4±2.1 MJ. The group that met 70% of their requirement values were the four-year olds with mean intake of 5.1±.5 MJ.

In the case of the urban children, the group that met 69% of their requirement values were the two-year olds with mean intake of 3.9±.1 MJ. The group that met 87% of their requirement values were also the four-year olds with mean intakes of 6.5±.9 MJ.

4.9.2: Protein intake and Adequacy

Tables 39 and 40 also show the mean protein intakes of the 2-5 year olds from both urban and rural areas. The 2-5 year olds from the urban area met about 84-88% of their protein requirement values while those from the rural area met 70-76% of their values.

Looking at Appendix 4, it will be observed that individually, the urban children met 76-94% of their requirement values while the rural children met 65-85% of their requirement values. Thus, mean intake value for these groups can obscure some individuals with lower intakes.

However, urban children had higher protein intakes than those from the rural area ($p < 0.05$) (appendix Table 5.1). Pre-school children from high income households also had higher protein intakes than those from low income households (appendix Table 5.2).

Table 39: MEAN NUTRIENT INTAKE (+ SD) OF RURAL CHILDREN

Age	Energy		Protein	Calcium	Iron	Vitamin A	Thiamin	Riboflavin	Niacin	Ascorbic Acid
	KCal.	MJ	g	mg	mg	R.E.	mg	mg	mg	mg
2 Year Olds										
Mean Nutrient Intake	845±508	3.4±2.1	11.12±0.56	369±38.18	5.0±0.42	752±41.61	0.27±0.02	0.23±0.21	4.86±0.79	21.15±4.81
FAO/WHO Requirement	1410		16.00	400-500	7	800	0.5	0.7	8.7	20
Intake as % of Requirement	60		70	92	71	94	54	33	56	106
3 Year Olds										
Mean Nutrient Intake	865±749	3.5±3.0	11.76±0.97	362±42.43	5.7±0.57	822±180.4	0.35±0.09	0.33±0.08	5.59±0.17	19.14±0.11
FAO/WHO Requirement	1410		16.00	400-500	7	800	0.5	0.7	8.7	20
Intake as % of Requirement	61		74	91	81	103	70	47	64	96
4 Year Olds										
Mean Nutrient Intake	1273±113.8	5.1±.5	14.18±1.17	376±9.89	5.1±0.28	1069±66.5	0.40±0.00	0.4±0.07	4.91±1.85	23.64±7.27
FAO/WHO Requirement	1810		20.00	400-500	7	1000	0.7	0.9	11.2	20
Intake as % of Requirement	70		71	94	73	107	57	44	44	118
5 Year Olds										
Mean Nutrient Intake	1128±154·1	4.6±.6	15.19±2.06	422±39.9	4.9±1.04	852±374.9	0.39±0.01	0.37±0.06	6.5±0.66	17.48±0.41
FAO/WHO Requirement	1810		20.00	400-500	7	1000	0.7	0.9	11.2	20
Intake as % of Requirement	62		76	106	70	85	56	41	58	87

Table 40: MEAN NUTRIENT INTAKE (± SD) OF URBAN CHILDREN

Age	Energy		Protein	Calcium	Iron	Vitamin A	Thiamin	Riboflavin	Niacin	Ascorbic Acid
	Kcal.	MJ	g	mg	mg	R.E.	mg	mg	mg	mg.
2 Year Olds Mean Nutrient Intake	979±24.19	3.9±.1	13.82±0.71	430±7.81	6.4±0.46	581±52.4	0.3±0.02	0.36±0.04	5.4±0.75	21.28±4.1
FAO/WHO Requirement	1410		16.00	400-500	7	800	0.5	0.7	8.7	20
Intake as % of Requirement	69		86	108	91	73	60	51	62	106
3 Year Olds Mean Nutrient Intake	1117±157	4.6±.6	13.53±0.70	376±17.7	4.4±0.28	741±1054	0.3±0.04	0.35±0.07	5.1±0.17	23.19±5.47
FAO/WHO Requirement	1410		16.00	400-500	7	800	0.5	0.7	8.7	20
Intake as % of Requirement	79		85	94	63	93	60	50	59	116
4 Year Olds Mean Nutrient Intake	1581±224	6.5±.9	16.78±2.26	370±16.3	6.3±0.14	877±195.2	0.5±0.07	0.54±0.01	5.4±0.36	21.76±4.07
FAO/WHO Requirement	1810		20.00	400-500	7	1000	0.7	0.9	11.2	20
Intake as % of Requirement	87		84	93	90	88	71	60	48	109
5 Year Olds Mean Nutrient Intake	1321±313	5.4±1.2	17.64±0.56	352±32.92	6.2±0.25	940±211.1	0.5±0.02	0.49±0.16	7.1±0.14	17.09±4.59
FAO/WHO Requirement	1810		20.00	400-500	7	1000	0.7	0.9	11.2	20
Intake as % of Requirement	73		88	88	89	94	71	54	63	85

4.9.3 Mineral intake and Adequacy

Mean calcium and iron intake and the percentages of FAO/WHO (1970) met by various age groups are shown in Tables 39 and 40 for both rural and urban pre-school children respectively.

Calcium intake for all the pre-school children from both rural and urban areas were marginal. In the rural area, the five year olds had the highest intake of 422±39.9 mg and met 106% of their requirement values. The three year olds had the least intake of 362±42.43 mg which met 91% of their requirement values. In the case of urban children, the two year olds had the highest intake of 430±7.81 mg which met 108% of their requirement values. On the other hand, the five year olds had the least intake of 352±32.9 mg which met 88% of their requirement values.

All pre-school children from both study areas had marginal intake of iron too. The rural children met 70-81% of their requirement values while the urban children met 63-91% of theirs.

4.9.4 Vitamin Intake and Adequacy

Thiamin, riboflavin and niacin intakes of both rural and urban pre-school children were below the amount recommended by FAO/WHO (1973) as shown in Tables 39 and 40. Mean thiamin intake for various age groups of children from both study areas were slightly higher than the riboflavin and niacin intakes.

As regards the rural children, a high thiamin intake of 0.35 ± 0.09 mg which met 70% of their requirement values was by the three year olds. The two year olds had the least intake of 0.27 ± 0.02 mg which met 54% of their requirement values. In terms of their urban counterparts, the highest intakes of 0.5 ± 0.07 mg and 0.5 ± 0.02 mg were by the four and five year olds respectively and they represented 71% of both their requirement values. The least intake of 0.3 ± 0.02 mg and 0.3 ± 0.04 mg were by the two and three year olds respectively, both met 60% of their requirement values.

Riboflavin and niacin intakes were relatively lower than that of thiamin in all age groups from both rural and urban areas. The rural children met 33-47% of their riboflavin requirement values while their urban counterparts met 50-60% of their values.

The rural children also met 44-64% of their niacin requirement values while the urban children met 48-63% of their requirement values too.

Mean vitamin A intake of all pre-school children from both rural and urban areas showed that their intake were marginal. Some pre-school children from the rural area also exceeded their recommended requirements as shown in Tables 39 and 40. However, the rural children met 85-107% of their vitamin A requirements while those from the urban area met 73-94% of their requirements.

Mean ascorbic acid intake of pre-school children from both rural and urban areas and percentages of FAO/WHO (1970) recommendations met by various age groups are shown in Tables 39 and 40. All the age groups from the urban area exceeded their intake requirement values except for the five year olds who met 85% of their requirement values (which is still marginal!). In the case of the rural children, the two and four year olds exceeded their requirement values while the three and five year olds had marginal intake of 96 and 87% of their requirement values respectively.

CHAPTER FIVE

5.0 DISCUSSION

5.1 Women's Work Pattern

Most of the women were within the age range of 20-41 years. This age category pattern was not surprising as they depict the child bearing age of women and mothers of pre-school children are likely to be within these age categories. The women also had various marital status and this might have also accounted for part of the reason why they had to work in order to take care of their children. Some cases of female-headed households were also observed and this might be part of the reason why these women work. They take the sole responsibility of running their households, thus, 16% of female-headed households were seen in the rural area while 11% were from the urban area.

The fact that majority of the women were employed might be due to the economic situation in Nigeria which has become too unbearable that women now need to earn income in order to help their husbands and for the welfare of their families. This finding agrees with

that of Sivard (1985) who reported that the proportion of women officially recorded as being part of the paid labour force in developing countries has increased. Also it has been observed that over two-thirds of Nigerian mothers are engaged in employment in addition to that of being a wife and mother (NDHS, 1982).

Time spent at workplaces by working women actually varied. None of them spent less than 6 hours at their workplaces daily while some spent as much as 10 to 11 hours daily at their workplaces. King and Evenson (1983) reported that the three determinants of time allocation are occupation, market work and children. Thus, the time spent by these women at their workplaces will determine the time to be allocated to other daily activities.

Some of the women studied worked part-time while others worked full time. This finding, however, is in line with those of Adelman (1983) who reported that some of the working women studied worked full time while others worked part-time. Many reasons were given for their choice of working part-time; but 53.4% of the rural women and 45.5% of the urban women all indicated that the part-time work was the type they

could secure. Even among the unemployed from the rural area, 37.5% of them indicated that they were unemployed due to their inability to secure employment. This suggests that most of these women will work if they find employment. These observations agree with that reported by Oppong (1985), that in Africa, the deteriorating economic conditions have led to increasing number of women being employed.

5.2 Nutritional Status of the Pre-school Children

The fact that most of the women studied were working implies that most of the pre-school children were from working-mother households. Generally, there were distinct sectoral differences in anthropometric measurements of children studied. There were more stunted (58.72%), wasted (37.5%) and underweight (17%) children in the rural area as opposed to urban children with (39%, 9.7% and 8.2% of same cases), respectively. This indicates that stunting is a more common problem than is wasting in this population (WHO, 1983). This pattern is consistent with findings from previous study by NDHS (1992), where 43% of Nigerian children (0-5 years)

studied were stunted while others were wasted and underweight. Also the stunting observed in this study was similar to the previous reports of Okeke, 1988; Atinmo et al, 1985; Akinlosotu and Hussain, 1985. They all reported low weight and height for age among Nigerian children.

The height deficits observed appears to be chronic in nature and is likely to result from prolonged periods of low dietary intakes as shown with the nutrient inadequacy and recurrent infections with the clinical observations due to unsanitary conditions. Other factors like genetic and endocrine mechanisms could also contribute to low height for age. Stunting is frequently associated with overall economic conditions especially mild to moderate types or repeated infections (WHO, 1987).

The general low body weight observed was a reflection of low energy intake reported during the dietary survey. Thus, it was not surprising to observe weight deficits among the subjects. Low weight for age observed in this study also corresponds to the findings of Falusi, 1985; Akinlosotu and Hussain, 1985; Addo, 1983 and Nnanyelugo, 1982[a]. They all

reported that the children they studied had low weights for their ages.

According to WHO (1987), the most usual and widely recognized indicator of protein energy malnutrition (PEM) is low weight for age. So, those children with low weight for age suffered from some degrees of PEM. Thus, it was not surprising that one of the clinical signs, (hair changes) was observed on some of the children namely, 5.11% and 1.86% from the rural and urban areas respectively. However, clinical signs of nutrition deficiency diseases appear in stages. There would be reduction in physical activities before other signs of energy deficiency appear. Growth retardation may be the first response of the body to protein deficiency. Appearance of clinical signs such as colour changes of the hair and/or oedema may be the final stage and they appear in extreme cases. There is then need to incorporate biochemical tests for assessing nutritional status in further researches.

Using weight for age and height for age index to measure nutritional status actually presents some problems. This is because the precise ages of children are not often known especially in developing countries

and among illiterate mothers. As a result, errors of interpretation may arise from an attempt to interprete growth statistics with approximate ages. Thus, weight for height measurement is the best index for assessing the nutritional status of any given population where the exact ages of the subjects are not known. This is because the exact weight and height measurements of the individuals can be obtained.

In this study, results got from using weight for height index showed that higher percentages of children from both urban and rural areas were more normal than in the case of using height for age index. The higher percentages of malnourished children observed while using the height for age index could be due to over-estimation of the ages of the subjects. The most prevalent form of malnutrition observed in this study was stunting which is indicated by low height for age. It is usually caused by past history of malnutrition while wasting is the result of acute or more immediate undernutrition. Stunting is a measure of overall social deprivation (WHO, 1987).

More cases of clinical signs of malnutrition found among the rural children than their urban counterparts, is likely due to the pattern of food intake of the children. Even from the weighed food intake of children studied, the protein and riboflavin intakes of urban children were better than those from the rural area. During the survey, it was equally observed that many households in the rural area consumed less leafy vegetables and had very low intake of proteinous foods. The level of nutrition knowledge and practice of urban mothers which were better than those of their rural counterparts might have contributed to these variations in the nutritional status of their children. Above all, the urban women had better educational qualification when compared to the rural women. Leslie (1987) pointed out, that women's education have been known to be positively related to knowledge of good child health and nutrition practices, which in turn, is positively related to child nutritional status.

More cases of illness recorded in the rural than the urban area (within the last six months of the survey period) might be due to certain socio-economic

influences, or health and nutrition knowledge/practice of mothers. Most households in the rural area live in unsanitary environments, and had poor hygienic practices, for instance, majority of the households had poorly kept pit laterines and for some, defecation in the bushes was common. These practices might have contributed to many cases of diarrhoea recorded in the rural area.

5.3 Nutrient Intake of the Pre-school Children

The mean energy intake of the pre-school children were below the FAO/WHO/UNU (1985) recommendations in both urban and rural areas. The urban children met 76-94% of their protein requirements while the rural children met 65-85% of their requirements. These findings are not too different from the reports of earlier works done in Nigeria.

Cases of low energy intake among various groups in Nigeria have been reported by some researchers (Okeke, 1988 and Nnanyelugo et al, 1985). Insufficient food intake observed during the weighed food intake survey actually resulted in the children's low energy intake. Studies by (Falusi, 1985; Addo, 1983 and

Enweonwu, 1980), reported that factors such as low income, large family size and other environmental factors were responsible for inadequate food intake. Okeke (1988), attributed this low energy intake to deficiency in total food intake at community, family and individual levels.

However, the low protein intake observed in this study might be due to a number of factors. Frequency of consumption of some protein rich foods such as fish, crayfish was high but this did not imply adequacy of protein. Quantities of protein rich foods used in meal preparation were not enough to supply the required amount of protein. Other foods rich in protein such as meat, egg, milk and fish were not consumed in reasonable quantity. The economic situation in Nigeria may have contributed to this trend of low protein and energy intake found in this study. The protein rich foods are very expensive, thus, cannot be afforded by most households. Again, the nutrition knowledge and practice of mothers may be a contributory factor. Good nutrition knowledge and practice will enable a mother make wise choice of food because the protein needs of a household can be met by choosing from the inexpensive sources of protein.

Calcium intakes for all the pre-school children from both sectoral zones were just marginal. Intake of calcium-rich foods such as milk and milk products, eggs and shelled animals were actually low. So, cereal grains may have been the major source of calcium for these subjects. Again, the economic situation in Nigeria and the consequent high cost of food items has made it difficult for most households to consume adequate amount of calcium rich foods like milk, eggs and milk products. Inadequate calcium intake in Nigeria had been reported by Nnanyelugo (1985); Okeke (1988) and Atinmo et al, (1985).

All the pre-school children from both sectoral zones also had marginal intakes of iron. King et al (1985) also reported adequate iron intakes by their subjects in Anambra State. Though the calculated value of iron was high, the level of bioavailability is still questionable. This is due to the anti-nutritional factors which interfere with iron absorption from plant sources. Foods rich in iron consumed by the pre-school children included dried beans, dried fish and leafy vegetables.

Thiamin, riboflavin and niacin intakes of both urban and rural pre-school children were below the amount recommended by FAO/WHO (1973). The low levels of these nutrients could be due to the monotonous nature of the diets of the pre-school children. Variety of foods needed to be ingested before the required amounts are obtained, as these nutrients are distributed in foods in very small amounts. Other researches done in Nigeria reported low levels of these vitamins (Nnanyelugo et al (1985); Okeke (1988) and King et al, (1985).

As regards niacin, the amount available to the body could be more than the calculated value. This is because niacin can be synthesized in the body using tryptophan in the ratio of 60:1 for tryptophan and niacin respectively.

High vitamin A intakes of the pre-school children must be due to their consumption of red palm oil and dark-green vegetables, which are food items rich in vitamin A. Other good sources of the vitamin A like liver, eggs and dairy products are too expensive and quite beyond the reach of most households.

The high ascorbic acid intake of the pre-school children could be due to the frequent consumption of fruits in season as snacks by the pre-school children. Again, ascorbic acid is important for iron metabolism because it is known to increase the efficiency of iron absorption. Previous studies done in Nigeria reported very high intake of ascorbic acid, (Okoro, 1991; and Nnanyelugo et al, 1985). Okoro (1991) attributed the very high level of ascorbic acid intake recorded, to high consumption of leafy vegetables and fresh fruits by the subjects.

However, in this study, intakes were not as high as 349% reported by Okoro (1991), because home gardens are not generally practised by households in Awka and Mgbakwu communities.

5.4 Effect of Women's Work on Child Nutrition

Mothers of pre-school children studied work as school teachers, civil servants, bank staff, private industry/company staff, government-owned industry/company staff and the self-employed. The self-employed include women working in their own private establishments, for instance, as dressmakers, hair dressers, farmers,

petty traders etc. The rest of the women were classified as "paid-employed".

The significant difference in the weight for height measurements of children of self-employed and paid-employed women found in this study could be due to these reasons. Majority of these self-employed women were from the rural area and generally, anthropometric measurements of pre-school children from the urban area were better than that of the rural area. This finding may equally be due to disparities in socio-economic status, nutrition knowledge/practice of mothers and their educational attainment. Along the same line, Wolfe and Behrman (1982) reported that children of women who worked in the informal sector had significantly better growth.

Location of mother's workplace had an effect on the child's nutritional status. Two-year old children of women employed at or near the home had significantly better weight for height than those of women working away from home in both urban and rural areas. Several researchers (Aguillon et al, 1982; Grewal et al, 1973; Golpadas et al, 1982; and Popkin, 1980), all reported that mothers of most malnourished children were all engaged in economic activities outside the home.

Tucker (1986), also observed that children of women employed at home had significantly better weight for height than those of women employed away from home. This finding might be due to the type of child care received by these children. The substitute child caretakers who cared for the young children while the mothers were away from home, were probably minimally competent in feeding and related child care tasks.

However, in this study, the great number of malnourished children found in households of mothers working within the home actually comprised of 2-5 year old children in general. It should be noted that children have various needs based on their developmental stages. In the second year of life, children normally begin to walk, which creates a substantial change in their mobility, although they are not yet able to perceive and respond appropriately to danger. This is the period during which children are most prone to accidents, vulnerable to illnesses and most in need of supplementary feedings of high protein and energy dense foods, as well as more time to insure proper feeding. During this period, help from the child caretaker could be extremely valuable. The 4-5 year olds might not need

such care. Thus, the impact of child caretakers will only make much sense in the case of 2-3 year old children.

5.5 Effect of household income level on child nutritional status

Data collected from this study indicated that household income level may have some effects on the nutritional status of young children through mechanisms affecting food consumption and health of the child. Height of 2-5 year old children from high income households were significantly different from those of other income groups. Also, children from high income households had significantly higher weight for height measurements than those from low income households. These findings might be due to the fact that mothers from high income households had enough funds to purchase high quality and quantity foods, especially energy dense foods. Consumption of such foods may have improved their children's nutritional status.

Findings in this work are also in line with those of Quatromon et al (1987). They reported that household socio-economic status has the most significant impact

on growth process. They further suggested that children from lower socio-economic households were more likely to have nutrient deficiencies and chronic diseases which tend to retard growth. Also several studies done in Nigeria showed that higher income households have better weight and height attainments; (Falusi, 1985; Addo, 1983 and Nnanyelugo, 1982[b]).

The fact that pre-school children from high income households had higher protein and riboflavin intake may also be attributed to the high cost of food being experienced in Nigeria in recent times. As a result of this, most households do not consume balanced diets, thus, the very high number of malnourished children observed in this study.

5.6 Child Care Pattern of Women

All women studied indicated using one form of child caretaker namely older children/siblings, house-helps, brothers, sisters, mothers, mother-in-laws and nannies. This finding agrees with that reported by OEF (1979), that care of children by older siblings is a common form of child care in developing countries. It ranked as the most important type of non-maternal

child care in Dominican Republic, the second most important source in Sri Lanka, Brazil and Peru. Anker and Hein (1985) however, reported that data from various other developing countries also show that a working mother often depends on her mother or mother-in-law for child care during the working hours. Along the same line, Date-Bah (1987), observed that for Ghanaian women in paid employment, the single most common child caretaker for their children was the maternal grand-mother accounting for 36% of cases.

The fact that none of the rural women indicated using nannies as child caretakers while just 8.6% of the urban women utilised such services, might be due to the enormous amount of money normally demanded by the nannies for their services. Some of the rural households might not afford to spend such amount. As a result of this, most of the rural women utilised child caretakers below 18 years of age, same with some of the urban women. Uyanga (1980) reported that both girls and boys between the ages of 7-15 and 7-12 years and in poorer working mother households played the role of child caretakers.

Most of the women studied indicated that formal child day care centres were available in their areas. This finding is in line with observations made by APHA (1984) that in most developing countries, some commercially or communally provided child care services have been established. Services of these formal child care centres were utilised by some of the women. Bamisaiye and Oyediran (1983) reported that some working mothers were assisted with child care by attendants in creches at day nurseries.

However, mothers were just moderately satisfied with the quality of their various child caretakers. Thus, establishment of community creches and kindergatens managed by well trained child care providers should be enforced. This will go a long way in alleviating the anxiety and problems experienced by mothers in selecting good quality child caretakers.

5.7 Time Allocation Pattern of Women

Generally, the urban and rural women spent more time on income generating activities than on household activities. This finding might be due to the economic recession being experienced in Nigeria in recent times. This had made more women to work and earn cash income,

for the welfare of their families. As a result of all this, less time is spent on household activities like maternal child care. Khare (1979) reported that time spent on household activities such as cooking and fuel acquisition will be reduced depending on economic and social circumstances.

The fact that rural women spent more time on household activities like fetching water and firewood was not surprising. This is because the urban women earlier indicated that their major source of water supply was from taps and water-tankers while their major source of fuel was kerosene and gas. Less time will definitely be spent procuring water and fuel in the urban area, unlike the rural area, where women had to trek long distances to fetch water from the village streams. Firewoods were collected from the farmlands located so many kilometres away. This finding is also in line with that of Okeke (1988), Uyanga (1980) and Popkin (1980). They all reported that the time spent by the rural mother on her activities will be different from that of her urban counterpart who may have time-saving devices such as cooker, refrigerator, portable tap water, pots, pans and other

electrically operated facilities. This is as a result of the long time spent fetching water and firewood, pounding grain or food with mortar and pestle and in food preparation, processing and preservation.

The nature of certain occupations, for instance, the self-employed, bank staff and private industry/ company staff, made the women to allocate more time to work-related activities than others. This finding agrees with that of King and Evenson (1983), they pointed out that the three determinants of time allocation are occupation, market work and children. Some researchers also observed that the time available to the mother if she performs the dual role of mother/housewife and working mother is reduced, thus resulting in the reduction of time devoted to her family and normal household chores (Khare, 1979; King and Evenson, 1983). It is also a widely known fact that those working in certain establishments like banks, spend a great deal of time at their workplace unlike people working in other establishments.

However, it was observed during the survey that some of these women in addition to having a great

workload also engage in other economic activities during their leisure time. This actually accounts for less time spent on activities like maternal child care and voluntary activities.

Less time spent on child care by these working women may be detrimental to the nutritional status of their children. This is because, their children are left in the care of substitute child caretakers for most of the time. The quality of substitute child caretakers utilised by the women may now determine the nutritional status of their children as they spend much time with the child caretakers who feed and cater for the children while their mothers are away from home.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

SUMMARY

The effect of women's work on child nutrition was investigated in Awka and Mgbakwu communities of Anambra State, in Nigeria. Three hundred mothers of pre-school children (2-5 years) were used for the study. Questionnaire, 3-day weighed food intake and selected anthropometric indices were used for collecting data.

Major findings of this study include:

1. All urban women and 95% of rural women were employed.
2. The anthropometric values showed that (48.2%) of the children were stunted, (22.6%) wasted and (12.3%) were underweight when compared with National Centre for Health Statistics (NCHS) standards.
3. The urban children had better nutritional status than the rural ones.
4. Women in paid-employment produced children with significantly higher weight for height (43%) than the self-employed (35%) ($p < 0.05$).

5. Pre-school children from high income households had higher protein and riboflavin intakes than those from low income households.

6. Two-year old children of women employed at or near the home had significantly better weight for height than those of women working away from home in both urban and rural areas (urban - 45 : 36%, $p < 0.05$); (rural - 41.7 : 20.8%, $p < 0.05$) respectively.

7. Nutrition knowledge and practice of urban women were better than those of rural women with mean scores of 65.4 : 40.2% respectively, ($p < 0.05$).

8. Two-year old children taken care of, by child caretakers above 18 years had better weight for height measurements than those cared for by child caretakers below 18 years in both urban and rural areas (urban - 49.3 : 33.3%, $p < 0.05$ and rural - 44 : 25%, $p < 0.05$).

9. Nutrient intake of the pre-school children were below the FAO/WHO values for seven of the nutrients calculated. However, vitamin A and ascorbic acid were slightly higher. Riboflavin and niacin intake were relatively lower with mean

intake ranging between 32-66% for the rural and 43-67% for the urban children.

10. Time allocation of the women studied showed that majority of them spent more time on income generating than on household activities.

11. More cases of the clinical signs of malnutrition and incidence of illness were observed among the rural children as opposed to urban children.

CONCLUSION

Maternal work had some effects on the nutritional status of young children through mechanisms affecting food consumption and health of pre-school children. Low anthropometric measurements were recorded. The deficits in weight and height of the children were indicators of undernutrition. Stunting was the most prevalent form of malnutrition observed in this study. Food intake was generally inadequate both in quantity and quality. High cost of food items presently experienced in Nigeria poses a great problem to most households in their efforts to maintain balanced diets.

A salient issue is that women's work is important for the food availability in households. It is also assumed that food availability is an important precondition for adequate feeding of the child in areas where children are given priority during food distribution. Thus, the positive effects of household income level on child nutritional status observed in this study could be a function of extra-income to purchase high quality young child-appropriate foods.

On the relationship between women's work and time, majority of them spent more time on income generating than on household activities, consequently less time on maternal child care! This implies that their pre-school children spent more time with substitute child caretakers. Women's responses on the quality of child caretakers utilised, showed that they were moderately satisfied with the services recieved. Moreover, all the women indicated using one form of substitute child caretaker. Women's time constraint was not a very important factor in explaining the variation in children's nutritional status in these areas of study. What seemed to be more important was the quality and quantity of diets fed to young children.

RECOMMENDATIONS

Based on the results of the study the following recommendations were made with the aim to improve the nutritional status of children of working mothers.

1. Policies and programmes that enhance women's economic and educational opportunities are of central importance. This will ensure that mothers are able to obtain the nutritionally high quality foods necessary for good child nutrition. Higher incomes are also necessary to ensure that women consume good quality foods to meet their own needs especially when experiencing the combined stress of motherhood and strenuous or long work hours.

2. Health and nutrition education should be intensified, especially in the rural areas emphasizing the high energy needs of pre-school children. Thus, community nutritionists should educate mothers on good nutrition practices that ensure adequate household food security. Nutrition education should be incorporated into the adult education programmes already in existence.

3. Current nutrition programmes, particularly those incorporating nutrition education should be evaluated so as to identify the bottle-necks in terms of getting the appropriate "messages" to mothers. This should include evaluating the role and success of medics and para-medics in delivering nutrition education.

4. High prices of food items are barriers to consumption of balanced diets. Government or their agencies should devise means of reducing food prices. This should include reviving the food commodity boards for price control.

5. Further research is recommended to assess the nutritional status of pre-school children using biochemical tests to determine the degree of protein energy malnutrition.

6. Policy makers should enforce the establishment of community creches and kindergartens managed by well trained child care providers in order to alleviate the anxiety and problems experienced by mothers in getting good quality child caretakers.

CONTRIBUTIONS OF THE STUDY TO KNOWLEDGE

1. A very important finding of this study is that it provided information on the extent of women's involvement in paid labour force in Nigeria. Most of the women in both rural and urban areas were employed and earning cash income. Those women who were unemployed also expressed their desire to work whenever they secure employment.

2. Highlighted details concerning their general work pattern includes, the various occupations engaged in, by these women and their duration of work which was either full time or part-time work. Again, the study revealed that it will be very difficult to change their pattern of

economic activity due to the economic recession being experienced in Nigeria.

3. The study demonstrated the extent to which women's work may affect the nutritional status of their children. Thus, the study revealed that (48.2%) of the children studied were stunted, (22.6%) wasted while (12.3%) were underweight. Household income level had an effect on child's nutritional status and nutrient intake. Location of women's workplace had an effect on child's nutritional status in both study areas.

4. Time use pattern of women was highlighted. The fact that they spent more time on income generating activities implies that their children are left in the care of substitute child caretakers for most of the time. Establishment of community creches and kindergatens managed by well trained child care providers were suggested as solution to the problem. This will help to alleviate the anxiety and problems experienced by mothers in getting good quality child caretakers.

REFERENCES

Adelman, C. (1983). An analysis of the effect of maternal care and other factors affecting the growth of poor children in Lima, Peru. D.Sc. thesis, John Hopkins University, School of hygeine and public health.

Addo, A.A. (1983). Assessment of nutritional status of urban pre-school children in Northern Nigeria. Nigerian Journal of Nutritional Science 4: 131-139.

Aguillon, D.B., Cacdo, M.M., Arnold, J.C. and Engel, R.W. (1982). The relationship of family characteristics to the nutritional status of pre-school children. Food and Nutrition Bulletin. 4: 5-12.

Akinlosotu, R.A. and Hussain, M.A. (1985). The usefulness of height at first year of schooling as an index of nutritional status of a community. Nigerian Journal of Nutritional Science 6: 131-141.

Anker, R. and Hein, C. (1985). Sex inequalities in urban employment in the third world. New York: St. Martins Press.

APHA-American Public Health Association/clearing house on infant feeding and maternal nutrition (1984). Government legislation and policies to support mothers and breast feeding, improve maternal and infant nutrition and implement a code of marketing breastmilk substitutes. Report No. 3. Washington, D.C.

Atinmo, A., Umezurike, E.N. and Laditan, A.A.O. (1985). Plasma, zinc and calcium levels in growth retarded Nigerian children. Nigerian Journal of Nutritional Science 6: 77-84.

Bailey, W. (1981). Clinical undernutrition in the Kingston/St. Andrew metropolitan area: 1967-1976, Social Science and Medicine. 15: 471-477.

Bamisaiye, A. and Oyediran, M.A. (1983). Breast feeding among female employees at a major health institution in Lagos, Nigeria. Social Science and Medicine. 17: 1867-1871.

Becker, G. (1981). A Treatise of the family. Cambridge, M.A.: Harvard University Press.

Berio, A. (1979). The analysis of time allocation and activity patterns in nutrition and rural development planning. Food and Nutrition Bulletin. 6: 51-68.

Carloni, A.S. (1984). The impact of maternal employment and income on the nutritional status of children in rural areas of developing countries: What is known, what is not known and where the gaps are. Report prepared for UN/FAO, Administrative Committee on Co-ordination, Sub-Committee on Nutrition.

Cross, J.A. (1987). Politics, poverty and nutrition. Journal of American Dietetic Association 87:1007-1018

Cornia, G.A., Jolly, R. and Stewart, F. (1987). Adjustment with a human face: Protecting the vulnerable and promoting growth. New York: Oxford University Press.

Date-Bah, E. (1987). Sex segregation and discrimination in Accra-Tema: Causes and consequences, In sex inequalities in urban employment in the third world. New York: St. Martin's Press.

Davidson, S.; Passmore, R. and Eastwood, M.A. (1986). Human Nutrition and Dietetics 8th Edition. Churchill Livingston, Edinburgh.

Doughty, J. and Church, M. (1976). Value of traditional food practices in nutrition education. Journal of Human Nutrition. 30: 9-16.

Engle, P.L. (1980). The intersecting needs of working mothers and their young children. A report to the Ford Foundation. Journal of Tropical Paediatrics. 28: 262-265.

Engle, P.L. (1986). "The intersecting needs of working mothers and their children, 1980-1985". Report prepared for the Carnegie Foundation.

Engle, P.L. (1989). Child care strategies of working and non-working women in rural and urban Guatemala, In women work and child welfare in the third World. AAAS (American Association for the Advancement of Science) Selected Symposium 110, West View Press, Colarado.

Emmons, L. (1986). Food procurement and nutrtional adequacy of diets of low-income families. Ecology of Food and Nutrition. 18: 181-191.

Enwonwu, G.O. (1980). Nutritional requirements and nutritional status of Nigerians. Nigerian Journal of Nutritional Science 1: 89 - 96.

Falusi, A.O. (1985). Socio-economic factors influencing food and nutrition consumption of urban and rural households - a case study of Ondo State of Nigeria. Nigerian Journal of Nutritional Science 6: 47-54.

FAO - Food and Agriculture Organisation (1968). Food Composition Tables for Use in Africa. FAO. Rome.

FAO/WHO/UNU (1985). Energy and protein requirements. Technical Report Series. No. 724. Geneva.

FAO/WHO (1970). Requirements of thiamin, riboflavin and niacin. Who Report No. 362.

FAO/WHO (1973). Requirements of ascorbic acid, Vitamin D, Vitamin B, Calcium and iron. WHO Report No. 152.

Franklin, D.L. (1979). Malnutrition and poverty: "The role of mothers' time and abilities", Paper prepared for the Research Triangle Institute, Economics Department. Processed.

Golpadas, T.; Patel, P. and Bakshi, M. (1982). Selected socio-economic, environmental, maternal and child factors associated with the nutritional status of infants and toddlers. Food and Nutrition Bulletin. 10: 29-34.

Gozo, K.M. and Aboagye, A.A. (1985). "Impact of the Recession in African countries: Effects on the poor". Paper prepared for the International Labour Organization.

Grewal, T.; Golpadas, T. and Gadre, V.J. (1973). Etiology of malnutrition in rural Indian pre-school children (Madya Pradesh). Environmental Child Health. 19: 265 - 270.

Greiner, T. and Latham, M.C. (1981). Factors associated with nutritional status among young children in St. Vincent. Ecology of Food and Nutrition. 10: 135 - 141.

Gupta, B.M. and Mwambe, A. (1976). Study of malnourished children in Tanga, Tanzania: Socio-economic and cultural aspects. Journal of Tropical Paediatrics. 22: 268 - 273.

Haggerty, P.A. (1981). Women's work and child nutrition in Haiti. M.A. Thesis, Massachusetts Institute of Technology.

Hart, A.D. and Atinmo, T. (1982). The assessment of the nutritional status of urban and rural children in Rivers State of Nigeria. Nigerian Journal of Nutritional Science 3: 141-146.

Huffman, S.L. (1987). "Women's activities and impacts on child nutrition", In Food Policy: Integrating supply, distribution and consumption. Baltimore, John Hopkins University Press.

Jelliffe, D.B. (1962). Culture, social change and infant feeding: Current trends in Tropical regions. American Journal of Clinical Nutrition 10: 19-45.

Jelliffe, D.B. (1966). The assessment of nutritional status of the community. WHO Monograph Series No. 453.

Joekes, S. (1987). Women's work and social support for child care in the third world. Report prepared for Carnegie Corporation and Rockefeller Foundation, International Centre for Research on Women. New York.

Jones, E.Y., Neshiem, B.C. and Habicht, J.P. (1985). Influences of child growth associated with poverty. Cross sectional United States National Surveys. American Journal of Clinical Nutrition 42: 714-720.

Kain, J. and Oscar, R. (1985). A description of the use of household budget savings to estimate dietary intake of low income urban families. Ecology of Food and Nutrition 8: 19-25.

Khare, R.S. (1979). Women's role in domestic food acquisition and food use in India: A case study of low-income urban households. Food and Nutrition Bulletin 6: 59-76.

King, E. and Evenson, R. (1983). Time allocation and home production in Philippine rural households in Women and Work. Edited by Buvinic M., Lycette, M. and McGreevey, M. Baltimore, John Hopkins University Press.

King, J., Nnanyelugo, D.O., Ene-Obong, H. and Ngoddy, P.O. (1985). Household consumption profile of Cowpea (Vigna unguiculata) among low-income families in Nigeria. Ecology of Food and Nutrition 16: 209-217.

Koh, E.T., and Caples, V. (1979[a]). Frequency of selection of food groups by low-income families in Southern Mississippi. Journal of American Dietetic Association 74: 660-667.

Koh, E.T., and Caples, V. (1979[b]). Nutrient intake of low-income black families in South Western Mississippi. Journal of American Dietetic Association 75: 665-671.

Kumar, S.K. (1977). Role of the household economy in determining child nutrition at low income levels: A case study in Kerala. Occasional paper No. 95. Ithaca, New York. Cornell University, Department of Agriculture Economics.

Leslie, J. (1987). Women's work and child nutrition in the third world. Report prepared for Carnegie Corporation and the Rockefeller Foundation. Washington, D.C., International Centre for Research on Women.

Marchiones, T.J. (1980). "Factors associated with malnutrition in the children of Western Jamaica", In nutritional anthropology: Contemporary approaches to diet and culture. New York: Redgrave Publishing Co.

Marshall, L. (1987). Breasfeeding and its alternatives among Papua New Guinea Career Women - An issue in economic development. Ecology of Food and Nutrition 20: 311-322.

Marr, J.W. (1971). Individual dietary surveys; purposes and methods. World Review of Nutrition and Dietetics 13: 105-115.

Minge-Klevana, W. (1980). Does labour time decrease with industrialization? A survey of time allocation studies. Current Anthropology 21: 279-287.

Moreno-Black, G. (1983). Dietary status and dietary diversity of native highland Bolivian children. Ecology of Food and Nutrition 13: 149-156.

Myers, R. and Indriso, C. (1987). Women's Work and child care: Supporting the integration of women's productive and reproductive roles in resource poor households in developing countries. Paper prepared for the Rockefeller Foundation/IDRC Workshops on gender, technology and development. New York.

Nnanyelugo, D.O. (1983). Major nutritional problems of children in Nigeria and possible solutions in Anambra State experience. Growth 47: 381-393.

Nnanyelugo, D.O. (1982[a]). Nutritional practices and food intake measurements and their relationship to socio-economic grouping, location and their apparent nutritional adequacy in children. Appetite 3: 229-241.

Nnanyelugo, D.O. (1982[b]). The incidence of latent protein energy malnutrition among pre-school children in Anambra State of Nigeria. Nigerian Journal of Nutrition Science, 3: 11-17.

Nnanyelugo, D.O., Ene-Obong, H.N. and Ngoddy, P.O. (1985). Seasonal variations and the contributions of Cowpea (Vigna unguiculata) and other legumes to nutrient intakes in Anambra State, Nigeria. Ecology of Food and Nutrition. 17: 271-279.

NCHS - National Centre for Health Statistics (1976). Vital Statistics Report Series 11, 25: 1-20.

Nerlove, S. (1974). Women's workload and infant feeding practices. A relationship with demographic implications. Ethnology 13: 207-214.

Nieves, I. (1981). A balancing Act: Strategies to cope with work and motherhood in developing countries. Paper prepared for the ICRW roundtable on the interface between poor women's nuturing roles and productive responsibilities. Washington D.C.

NDHS - Nigerian Demographic and Health Survey (1992): Nutritional status of children under five years of age (Draft Report).

O.E.F. - Overseas Education Fund (1979). Child care needs of low-income mothers in less developed countries. Washington DC, OEF International.

Okeke, E.C. (1988). Dietary habits, nutrient intake and energy expenditure of low-income rural farm households in Anambra State, Nigeria. Ph.D. Thesis, Department of Home Science and Nutrition, University of Nigeria, Nsukka.

Okeke, E.C., Nnanyelugo, D.O., Kemdirim, O.C. and Ngoddy, P.O. (1986). Time allocation of women, household food intake and nutrient adequacy of low income farming populations in Anambra State in relation to their anthropometric variable, Paper presented at the annual conference of the nutrition society of Nigeria, ABU, Zaria, Nigeria.

Okoro, C.I. (1991). Nutrition knowledge, practice and nutrient intakes of low income families in Owerri urban in Imo State of Nigeria. M.Sc. Thesis, Department of Home Science and Nutrition, University of Nigeria, Nsukka.

Olusanya, E.O. (1977). Manual on food consumption surveys in developing countries. Ibadan University Press, Nigeria.

Omolulu, A. (1980). Nutrition surveys and formulation of food and nutrition policy. Nigerian Journal of Nutritional Science 1: 85-92.

Oppong, C. (1985). "An explosion of paid work", In People. International Planned Parenthood Federation. London.

Paolisso, M., Baksh, M. and Thomas, J.C. (1989). Women's agricultural work and child care and Infant diarrhoea in rural Kenya. AAAS (American Association for the Advancement of Science) Selected Symposium 110, West View Press, Colorado.

Popkin, B.M. (1980). Time allocation of the mother and child nutrition. Ecology of Food and Nutrition. 9: 1-14.

Popkin, B.M. (1983). Rural women, work and child welfare in the Philippines. In Women and Poverty in the Third World. Baltimore: John Hopkins University Press.

Popkin, B.M. and Solon, F.S. (1976). Income, Time, the working mother and child nutriture. Journal of Tropical Paediatrics, Environmental Child Health. 22: 156-166.

Powel, C.A. and Grantham-McGregor, S. (1985). The ecology of nutritional status and development in young children in Kingston, Jamaica. American Journal of Clinical Nutrition. 41: 1322-1331.

Powel, D.L. (1987). Personal communication, Kingston, Jamaica. University of the West Indies, School of Social Sciences, In the AAAS (American Association for the Advancement of Science) Selected Symposium 110, West View Press, Colorado.

Ponser, H.E., Smigelski, C.G. and Krachenfels, M.M. (1987). Dietary characteristics and nutrient intake in an urban homebound population. Journal of American Dietetic Association. 87: 452-458.

Platt, B.S. (1975). Tables of representative values of food commonly used in tropical countries. Medical Research Council Special Report Series: 302 (7th impression) HMSO, London.

Quatromon, P.A., Cook, R.A., Parvanta, I. and Halteman, W.A. (1987). Growth deficit among low income pre-school children in Maine. Nutrition Reports International. 35: 517-524.

Reaburn, J.A. and Daisy, M.K. (1979). Special determinants in food selection. Journal of American Dietetic Association. 74: 637-646.

Ronaghy, H.A., Kobout, E. and Nadidi, N. (1980). Body height and chronic malnutrition in school children in Iran. American Journal of Clinical Nutrition. 23: 1080-1092.

Savane, M. (1985). Femmes, production et crise Alimentaire en Afrique en sud du Sahara. Paper prepared for the international workshop on women's role in food self-sufficiency and food strategies. Paris, France.

Sivard, R.L. (1985). Women: A World Survey. Washington DC. World Priorities.

Smith, M.F., Paulsen, S.K., Fougere, W. and Ritchey, S.J. (1983). Socio-economic, education and health factors influencing growth of rural Haitian children. Ecology of Food and Nutrition. 13: 99-108.

Soekirman, S. (1985). Women's work and its effects on infants nutritional status in Central Java, Indonesia; Paper presented at the 13th International Congress of Nutrition, Brighton, England.

Trip, R.B. (1981). Farmers and Traders: Some economic determinants of nutritional status in Northern Ghana. Journal of Tropical Paediatrics 27: 15-22.

Tucker, K. (1986). Maternal time use, Differentiation and child Nutrition. Ph.D. Thesis, Cornell University, Ithaca, New York.

Tucker, K. (1988). Maternal employment, Differentiation and child health and Nutrition in Panama; In Women, work and child welfare in the third world. AAAS (American Association for the Advancement of Science) Selected Symposium 110, West View Press, Colorado.

Uyanga, J. (1980). Rural-urban differences in child care and breast feeding behaviour in South-Eastern Nigeria. Social Science and Medicine. 140: 23-29.

Van-Esterik, P. and Greiner, T. (1981). Breastfeeding and Women's work: Constraints and Opportunities. Studies in Family Planning 12: 184-197.

Ware, H. (1984). Effects of maternal education, women's roles and child care on child mortality, In Child Survival: Strategies for Research. New York, The Population Council.

Wandel, M. and Holmboe-Ottesen, G. (1988). Women as nutrition mediators: A case study from Sri Lanka. Ecology of Food and Nutrition 21: 117-130.

World Bank. (1987). World Development Report. Washington DC, The World Bank.

WHO - World Health Organization. (1987). Global nutrition status: Anthropometric Indicators. Nutrition Unit, Geneva.

Wolfe, B.L. and Behrman, J.R. (1982). Determinants of child mortality, health and nutrition in a developing country. Journal of Developmental Economics 11: 163-194.

Wray, J.D. (1978). Maternal nutrition, breastfeeding and infant survival, In Nutrition and Human Reproduction. Edited by W. Henry Mosley. New York: Plenum Press.

Youssef, N. and Hetler, C.B. (1984). Rural households headed by women: A priority concern for development; Rural employment programme research working paper. Geneva: International Labour Organization.

APPENDIX 1:

WOMEN'S WORK AND CHILD NUTRITION IN RELATION TO INCOME, TIME AND SUBSTITUTE CHILDCARE

QUESTIONNAIRE/INTERVIEW SCHEDULE

INSTRUCTION: Kindly provide answers to the following questions. All information supplied will be treated confidentially and is strictly for research purpose only.

SECTION 1: SOCIO-ECONOMIG CHARACTERISTICS AND WOMEN'S WORK PATTERN

1. Case Number (/ /). 2. Date: _____

3. Location: Urban: ( ). Town: _____

Rural ( ). Village: _____

4. Name: _____

5. Address: _____

6. What is your age?

(a) Below 20 yrs. ( ). (b) 21-30 yrs. ( ).

(c) 31-40 yrs. ( ). (d) 41 yrs. and above ( ).

7. What is your marital status?

(a) Single ( ). (b) Married ( ).

(c) Widowed ( ). (d) Divorced ( ).

(e) Separated ( ).

8. What is your educational status?

(a) No formal education ( ).

(b) Elementary school uncompleted ( ).

(c) Elementary school completed ( ).

(d) WASC/GCE/SSCE ( ).

(e) OND, NCE, TC II, NRN (or its equivalent) ( ).

(f) B.Sc., M.Sc., Ph.D. (or its equivalent) ( ).

9. What is your husband's occupation?

(a) Farmer ( ). (b) Civil Servant ( ).

(c) Trader ( ). (d) Artisan ( ).

(e) Others (please specify)_____.

9(b) Who is the head of your household?

(a) Male ( ). (b) Female ( ).

10. Are you employed?

Yes ( ). (b) No ( ).

11. If yes, in what kind of place do you work?

(a) School ( ) (b) Civil service ( ).

(c) Bank ( ). (d) Hospital ( ).

(e) Private industry/company ( ).

(f) Government-owned industry/company ( ).

(g) Others (please specify)_____.

12. How long have you been in the above employment?

(a) 1-5 yrs. ( ). (b) 6-10 yrs. ( ).

(c) 11-15 yrs. ( ). (d) 16-20 yrs. ( ).

(e) 21-30 yrs. ( ). (f) Above 30 yrs. ( ).

13. Where is your work place located? (Please indicate).

(a) Away from home ( ).

(b) Within your home ( ).

(c) Near your home ( ).

14. What is the distance in km?

(a) Less 1 km ( ). (b) 1-5km ( ).

(c) 6-10km ( ). (d) Above 10 km ( ).

15. How long does it take you to get there?

(a) 1-20 mins. ( ). (b) 21-40 mins. ( ).

(c) 41-60 mins. ( ). (d) Above 60 mins. ( ).

16. How do you get to your workplace?

(a) Walking ( ). (b) Personal car ( ).

(c) Public transport ( ). (d) Motorcycle ( ).

17. How many hours do you spend in your work place daily?

(a) 5 hrs. ( ). (b) 6 hrs. ( ).

(c) 7 hrs. ( ). (d) 8 hrs. ( ).

(e) 9 hrs. ( ). (f) 10 hrs. ( ).

(g) 11 hrs. and above ( ).

18. How long is your break time?

(a) Less than 30 mins. ( ). (b) 30-35 mins ( ).

(c) 36-60 mins ( ). (d) Above 60 mins. ( ).

19. Is your present work full-time or part-time?

(a) Full-time ( ). (b) Part-time ( ).

20. If part-time, what other work do you do apart from your normal work? (Please specify)_____.

21. What is your reason for working part-time?

(a) To have enough time to care for your children ( ). (b) It is the type of work you could secure ( ). (c) Husbands wish ( ).

(d) Other reasons (please specify)_____.

22A. What is the range of your monthly net income or wage rate? (From your work and other sources).

(a) ₦250-₦600 ( ). (b) ₦650-950 ( ).

(c) ₦1000 and above ( ).

22B. What is the range of your husband's monthly net income or wage rate?

(a) ₦300-₦600 ( ). (b) ₦650-950 ( ).

(c) ₦1000 and above ( ).

23. If you are not employed, what is your source of income?

(a) Husband's support ( ).

(b) Extended family support ( ).

(c) Others (please specify)_____.

24. If you are not employed, what is your reason for not doing so?

(a) You could not secure employment ( ).

(b) Husband's wish ( ).

(c) To have enough time to care for children ( ).

(d) Others (please specify) _____.

25. Who owns the house you live in?

(a) Personal/family house ( ).

(b) Rented house/government quarters ( ).

(c) Others (please specify)_____.

26. What is the size of your family?

(a) 1-5 ( ). (b) 6-10 ( ). (c) Above 10 ( ).

27. How many children in your home are within 2-5 years? _____

28. How many of your children died before the age of five? _____.

SECTION II: FAMILY FEEDING PATTERN

29. How often do your family feed in a day?

(a) Once ( ). (b) 2 times with snacks ( ).

(c) 2 times without snacks ( ).

(d) 3 times with snacks ( ).

(e) 3 times without snacks ( ).

(f) Others (please specify) _____.

30. How often do your children (within 2-5 yrs.) feed in a day?

(a) 3 times ( ). (b) 4 times ( ).

(c) More than 4 times ( ).

31. Please provide a 24 hour recall of meals given to your child (within 2-5 yrs.) yesterday - i.e. the foods you gave to your child in the morning, afternoon, evening, including snacks.

Breakfast	Lunch	Dinner	Snacks

32. What is the approximate amount of money spent by your family in feeding in a month?

(a) Below ₦300 ( ). (b) ₦400-₦600 ( ).

(c) ₦700-₦900 ( ) (e) ₦1000 and above ( ).

33. What amount of your own income is used or contributed in feeding your family monthly?

(a) Below ₦300 ( ). (b) ₦400-₦600 ( ).

(c) ₦700-₦900 (,). (d) ₦1000 and above ( ).

(e) None ( ).

34. What amount of your husband's income is used or contributed in feeding your family monthly?

(a) None ( ). (b) Below ₦300 ( ).

(c) ₦400-₦600 ( ). (c) ₦700-₦900 ( ).

(e) ₦1000 and above ( ).

SECTION III: CHILD CARE PATTERN

35. Who takes care of your children (within 2-5 yrs) when you are busy or not at home?

(a) Your husband ( ).

(b) Older children/siblings ( ).

(c) Your sister ( ) (d) Your brother ( ).

(e) Your household ( ). (f) Your mother ( ).

(g) Your mother-in-law ( ). (h) Nannies ( ).

(i) Child day care centres ( ).

(j) Others (please specify) _____.

36. How old is the person giving childcare in above?

(a) Below 18 yrs. ( ). (b) Above 18 yrs. ( ).

37. What is the educational status of the person taking care of your children?

(a) No formal education ( ).

(b) Elementary school uncompleted ( ).

(c) Elementary school completed ( ).

(d) WASC/GCE/SSCE ( ).

(e) Others (please specify) _____.

38. For how long has your child care-taker been working with children?

(a) 1-3 yrs. ( ). (b) 4-6 yrs ( ).

(c) 7-10 yrs. ( ). (d) 11 yrs and above ( ).

39. How will you rate your child caretaker on the following attributes? Your child cartaker,

	ATIMES	ALWAYS
(a) Likes to stay stay with children		
(b) Is patient with children		
(c) Understands the interests and needs of children		
(d) Loves children		

40. Are formal child day care centres available in your area?

(a) Yes ( ). (b) No ( ).

41. Do you utilise the services of these formal child day care centres?

(a) Yes ( ). (b) No ( ).

42. What is your reason for utilising the services of these formal child day care centres?

(a) It is close to your home ( ).

(b) Their services are expensive but have no

alternative ( ).

(c) Their services are up to standard ( ).

(d) Others (please specify) _____.

43. What is your reason for not utilising the services of these formal child day care centres?

(a) None is close to your home ( ).

(b) Their services are too expensive ( ).

(c) Their services are not up to standard ( ).

(d) Too young to leave home ( ).

(e) Others (please specify) _____.

SECTION IV: NUTRITION KNOWLEDGE AND PRACTICE OF MOTHERS

INSTRUCTION: Please indicate with a tick in the space provided, your opinion on the statements.

44.	Strongly Agree	Agree	Do not Know	Disagree	Strongly Disagree
(a) Force-feeding of children should be discouraged					
(b) Highly spiced food is good for infants					

(c) Children should be served very big portions of food.

(d) Sweet foods like candies and soft drinks are good nutritions foods for children.

(e) Pap mixed with groundnut is a good weaning food.

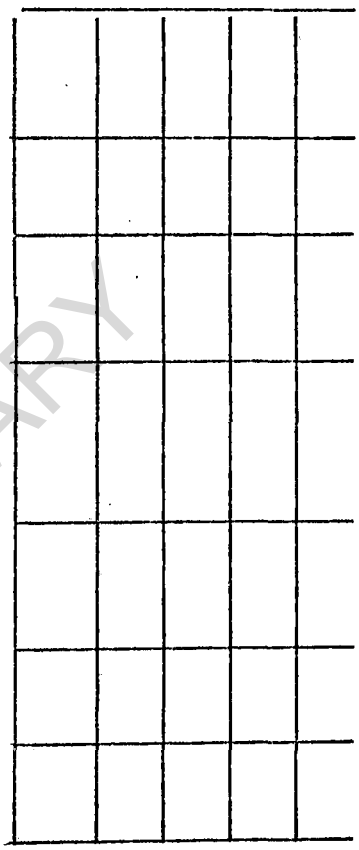
(f) Mothers first breast Secretion is excellent for babies.

(g). Disposing of water after cooking of vegetables removes some of the minerals and vitamins.

(h) Combining rice and beans helps in improving the protein quality.

(i) Breast milk is best for the baby.

(j) Breast milk should be given to babies on demand.



INSTRUCTION: Indicate with a tick the correct response for these statements.

45. A well balanced meal is one that

(a) Includes more protein than carbohydrates ( ).

(b) Contains small amounts of bread and margarine ( ).

(c) Includes the right amounts of all the food groups ( ).

(d) Is not too starchy or too fatty ( ).

46. Pregnant women need

(a) Less salt than most adult women ( ).

(b) To follow the basic food group recommendations for adults ( ).

(c) To restrict food intake in order to control weight gain ( ).

(d) More nutrient than most adult women ( ).

47. Children should be taken to the clinics for growth monitoring (i.e. taking their height, weight measurements etc.).

(a) occasionally ( ).

(b) Once a month ( ).

(c) When the child is sick ( ).

48. A child who develops diarrhoea should first be treated with

(a) Biscuits or any other hard food ( ).

(b) Antibiotics or other drugs ( ).

(c) Salt-sugar solution ( ).

49. Gruels like Akamu and other semi-solid foods are introduced to the child at

(a) Earlier than 3 months ( ).

(b) 3 months ( ). (c) 4 months ( ).

(d) 5 months ( ). (e) After the 5th month ( ).

	ATIMES	ALWAYS
50. How often do you feed your child on your own in a day?		
51. How often do you bath and dress your child on your own in a day?		
52. How often do you play with your child?		

53. Please place the following list of foods in their correct food group in spaces provided (with a tick).

	Group		
	Energy-giving Food	Body building food(proteins)	protective food (minerals and vitamins)
Rice			
Cassava			
Yam			
Beans			
Fresh Akidi			
Fish			
Crayfish			
Meat			
Eggs			
Snail			

Green vegetables			
Orange			
Mango			
Pawpaw			
Agidi			

SECTION V: DIARY OF ACTIVITIES OF MOTHERS

INSTRUCTION: Please fill in the time you spend in carrying out the following activities within 24 hours and the number of times you carry out the activities weekly for those done weekly.

54.

Activities	TIME	How often activity is done						
	Mins/Hr.	Daily	Weekly					Comments
			1	2	3	4	5	
Work Activities								
What time do you wake up?								
When do you leave home for work/farm?								
When do you close for work/farm?								
Household Activities								
Food preparation								
Food processing (.e.g. corn milling)								

		1	2	3	4	5	
Feeding child							
Dressing child/bathing							
Sweeping/cleaning the home							
Washing clothes							
Shopping							
Fetching water							
Fetching/chopping firewood							
Gardening							
Others							
<u>Leisure Activities</u>							
Eating							
Sleeping/resting							
Conversation							
Hair dressing/plaiting hair							
Watching TV/Listening to radio							
Travelling							
Reading							
Recreation (time spent interacting with children, playing games with them etc)							
Sports							
Others							

Voluntary Activities

		1	2	3	4	5	
Visiting/receiving visitors							
Social visits (e.g. marriage, and birth ceremonies)							
Religious activities							
Funerals							
Others							

ANTHROPOMETRIC MEASUREMENT, CLINICAL SIGNS, AND INCIDENCE OF CERTAIN CHILDHOOD DISEASES OF 2-5 YEAR OLDS

	Anthropometric Measurements					Clinical Signs						Incidence of Diseases in the last six months				
	Sex	Age	Height	M. Upper arm circumference	Weight	Hair changes	Oedema	Angular Stomatitis	Bitot's Spot	Anaemia	Wasting	Measles	Malaria	Diarrhoea	Fever	Cough
1.																
2.																
3.																
4.																
5.																
6.																
7.																
8.																
9.																
10.																

APPENDIX 2A

CALCULATION OF INDIVIDUAL INTAKE OF EACH INGREDIENT IN A RECIPE

1. Code No._____ 2. Age _____ 3. Sex _____

Wt. _____ Meal / B / L / S / Sn /

Day / M / T / W / Th / F / S / S /

Ingredient/ Recipe	(a) Amount in Recipe (g)	(b) Total cooked weight recipe (g)	(c) Amount of recipe consumed (g)	(d) Conversation factor (c/b)	(e) Amount of ingredient consumed (c/bxa)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

Meal / B / L / S / Sn / Day / M / T / W / Th / F / S / S /

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

Meal / B / L / S / Sn / Day / M/T/W/Th/F/S/S/

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

APPENDIX 2B:

Calculation of Nutrient Intake for Day

Case No. (/ /) 2. Age ( ) 3. ( ) 4. Body weight ( ).

Ingredient /food item	Amount consumed				Total consumed for day (g)	Factor	Energy (Kcal)	Protein (g)	Fat (g)	CHO (g)	Calcium (mg)	Iron (mg)	Vitamin A R.E.	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Ascorbic acid (mg)
	Meal 1 (g)	Meal 2 (g)	Meal 3 (g)	Meal 4 (g)													
Total for day																	

APPENDIX 2C:

CALCULATION OF AVERAGE NUTRIENT INTAKE VS REQUIREMENTS

1. Case No. ( ) 2. Age ( ) 3. Sex (M/F) 4. Body weight ( )
5. Height ( ).

Nutrients	Energy (Kcal)	Protein (g)	Fat (g)	CHO (g)	Calcium (mg)	Iron (g)	VIT (ug)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Ascorbic Acid (mg)
Intake for day 1											
Intake for day 2											
Intake for day 3											
Intake for day 4											
Mean intake for 3 or 4 days											
FAO Requirement											
Intake as % of FAO Requirement											

APPENDIX 3:
FOODS USED IN TROPICAL COUNTRIES

REPRESENTATIVE VALUES OF NUTRIENTS PER 100 gm EDIBLE PORTION

Common name of food	Calories	Protein (mg)	Fat (gm)	Carbohydrate (gm)	Calcium (mg)	Iron (mg)	Vitamin	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Ascorbic acid (mg)	Conversion factor
1. Pap or maize starch	268	9.4	3.3	74	18	3.3	-	0.26	.08	0	0	0.64
2. Immature maize	123	4	1.2	24	9	.7		.15	.1	1.7	10	2.08
3. Rice	354	8	1.5	70	10	20	-	.25	.05	2	0	1.06
4. Bread	251	8	.7	54.3	100	1.7	-	.18	0.03	2.6	0	1.0
5. Cassava	153	0.7	.2	37	25	1	-	.07	0.0	.7	30	1.0
6. Gari	351	1.0	1.1	84.2	45	1.6	-	0.08	.01	0.1	0	1.11
7. Green plantain	128	1.0	0.2	31	7	.5	100	0.05	.05	.07	20	1.18
8. Dried plantain	403	1.8	30	32.1	8	.6	.8	.4	.06	0	0	.92
9. Cocoyam	113	2	-	26	2.5	1	-	0.1	03	1	5	1.05
10. Yam	104	2	0.2	24	1	1.2	20	.1	.03	.4	10	1.3

APPENDIX 3 (CONT'D)

Common name of food	Calories	Protein (mg)	Fat (gm)	Carbohydrate (gm)	Calcium (mg)	Iron (mg)	Vitamin	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Ascorbic acid (mg)	Conversion factor
11. Moi-moi	243	15.1	15.5	11	16.5						-	1.0
12. Akara ball	445	19.3	33.1	18	16.3						-	.94
13. Beans	340	22	1.5	60	90	5	20	.9	.15	2.	0	1.00
14. Dried groundnut	579	27	45	17	50	2.5	-	.9	.15	17	-	1.0
15. Fresh groundnut	322	15	25	20	30	1.5	-	.5	0.1	10	10	.98
16. Melon (Egusi)	581	25	45	19	50	8	-	.1	.15	1.5	0	1.01
17. Oil bean	544	26	40	20	190	16	0	.07	0.3	.9	0	1.0
18. Pumpkin	28	2	.3	4	80	2.5	1000	.08	.2	.5	50	1.67
19. Waterleaf	25	2.4	0.4	4.4	121	5		.08	.18	.3	31	0.87
20. Okro	33	2	-	6	70	1	150	.1	.1	1	25	0.95
21. Onion	36	1.8	.5	6	40	3	500	.05	0.1	.5	50	.7
22. Fresh pepper	37	2	.5	6	20	1	130	.06	0.08	1	150	.88

APPENDIX 3 (CONT'D)

Common name of food	Calories	Protein (mg)	Fat (gm)	Carbohydrate (gm)	Calcium (mg)	Iron (mg)	Vitamin	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Ascorbic Acid (mg)	Conversion factor
23. Dried pepper	347	12	7	69	130	10	-	.04	0.2	1	-	1.0
24. Fresh tomato	20	1	-	4	5	.4	250	.06	0.04	.7	25	.97
25. Avocado pear	165	1.5	15	6	10	1	200	.07	0.15	1	15	1
26. Orange	53	.8	-	13	30	.5	30	.08	.03	.2	45	1
27. Palm oil	900	0	100	0	200	0	200	0	0	0	0	1
28. Frozen fish	73	17	.5	-	20	.7	-	.05	0.1	2.5	0	1
29. Dried fish	309	63	63	-	3000	35	-	.1	.2	6	0	1
30. Snail	82	12	2	4	1500	8	-	-	.05	1.3	-	1
31. Periwinkle	70	10	2	3	100	10	200	.05	.15	1.5	-	1
32. Crayfish	94	18	1.5	2	100	5	-	.05	0.1	2.5	-	1
33. Termite	148	10	12	0	12	1	-	-	-	-	-	1
34. Beef (Meat)	262	16	12	22	-	10	25	-	.07	0.15	4.5	1

APPENDIX 3 (CONT'D)

Common Name of food	Calories	Protein (mg)	Fat (gm)	Carbohydrate (gm)	Calcium (mg)	Iron (mg)	Vitamin	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Ascorbic Acid (mg)	Conversion factor
35. Tripe	60	11.6	1	0	70	.7	10	.18	0.1	3.5	0	1
36. Egg	158	13	11.5	.5	55	2.8	100	.12	.35	.1	-	1
37. Chicken	139	19	7	0	15	1.5	0	.1	.15	9	0	1
38. Cow milk whole	140	7	8	10	260	.2	320	.06	.32	.21	1.7	1
39. Stockfish	142	21	5.4	0	-	-	-	-	-	-	-	1
40. Beer	35	0.00	-	3	4	.2	-	.07	.06	0.32	1	1
41. Sugar	400	0	0	100	-	-	-	-	-	-	-	1
42. Maggi cube	51	1	0	0	-	-	-	-	-	-	-	1
43. Tea	40	10	0	0	30	0	0	-	0.9	6	0	1
44. Maltina												
45. Pear	58	.4	.6	14.6		6	.2	0	0	0	0	1
46. Plain cake	426	6	24	49.7		67	1.4	1.2	0.08	117	0	1
47. Salt												
48. Ogili	349	19.4	30.6	6.3	67	9.8	0	.06	.21	.4	0	1
49. Ora (Oha)	23	1.5	.2	4	40	5	30	.05	.05	.3	40	1

APPENDIX 4A: INDIVIDUAL MEAN NUTRIENT INTAKES OF RURAL CHILDREN EXPRESSED AS PERCENTAGE OF THE FAO/WHO REQUIREMENT

S/N.		Age	Energy Kcal	Protein (g)	Calcium (mg)	Iron (mg)	Vitamin A (R.E)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Ascorbic Acid (mg)
1.	Mean nutrient intake	2	834±37.04	10.68±3.6	342±89.49	5.3±1.9	763±138.5	0.27±0.13	0.3±0.12	5.11±1.4	25.7±7.97
	FAO/WHO Requirement		1410	16.00	400-500	7	800	0.5	0.7	8.7	20
	Intake as % of Requirement		59	67	86	76	95	54	43	59	129
2.	Mean nutrient intake	2	782±222.6	11.76±1.92	396.5±105.5	4.7±5.5	706±112.3	0.29±0.13	0.40±0.26	5.5±2.7	21.63±4.13
	FAO/WHO Requirement		1410	16.00	400-500	7	800	0.5	0.7	8.7	20
	Intake as % of Requirement		56	74	79	67	88	58	57	63	108
3.	Mean nutrient intake	2	918±318.8	10.92±3.79	310±74.27	5.6±1.7	787±994.7	0.26±0.12	0.25±0.03	3.97±0.73	16.12±3.56
	FAO/WHO Requirement		1410	16.00	400-500	7	800	0.5	0.7	8.7	20
	Intake as % of Requirement		65	68	62	80	98	52	36	46	81
4.	Mean nutrient intake	3	812±660.6	11.05±1.80	332±59.5	5.3±2.2	693±371.6	0.28±0.4	0.27±0.07	5.71±3.3	19.06±8.78
	FAO/WHO Requirement		1410	16.00	400-500	7	800	0.5	0.7	8.7	20
	Intake as % of Requirement		58	69	83	76	87	56	39	66	95
5.	Mean nutrient intake	3	918±77.09	12.46±3.6	392±56.15	6.1±0.53	949±165.6	0.41±0.19	0.38±0.14	5.47±2.3	19.22±6.48
	FAO/WHO Requirement		1410	16.00	400-500	7	800	0.5	0.7	8.7	20
	Intake as % of Requirement		65	78	98	86	119	82	54	63	96

APPENDIX 4A (CONTINUED)

6. Mean nutrient intake	4	1353±690.0	13.35±3.35	359±430.63	4.9±1.69	1022±206.5	0.4±0.08	0.3±0.23	3.60±0.97	18.5±3.79
FAO/WHO Requirement		1810	20.00	400-500	7	1000	0.7	0.9	11.2	20
Intake as % of Requirement		75	67	92	70	102	57	33	32	73
7. Mean nutrient intake	4	1192±429.6	15.00±1.99	383±196.08	5.3±1.52	1116±165.3	0.40±0.06	0.4±0.14	6.21±1.72	28.78±16.10
FAO/WHO Requirement		1810	20.00	400-500	7	1000	0.7	0.9	11.2	20
Intake as % of Requirement		66	75	96	76	112	57	41	56	144
8. Mean nutrient intake	5	1305±823.7	17.05±3.40	448±81.32	4.3±2.6	1277±1286.2	0.38±0.15	0.3±0.05	6.06±1.75	17.39±3.98
FAO/WHO Requirement		1810	20.00	400-500	7	1000	0.7	0.9	11.2	20
Intake as % of Requirement		72	85	90	61	128	54	33	54	87
9. Mean nutrient intake	5	1055±350.2	12.98±2.92	376±164.6	6.07±1915	711±191.5	0.4±0.13	0.4±0.19	6.2±1.65	17.93±4.81
FAO/WHO Requirement		1810	20.00	400-500	1000	1000	0.7	0.9	11.2	20
Intake as % of Requirement		58	65	94	71	71	43	43	55	90
10. Mean nutrient intake	5	1024±688.9	15.55±1.94	442±89.4	4.3±1.66	568±476.8	0.4±0.04	0.5±0.09	7.27±1.50	17.13±2.58
FAO/WHO Requirement		1810	20.00	400-500	7	1000	0.7	0.9	11.2	20
Intake as % of Requirement		57	78	88	61	57	57	56	65	86

APPENDIX 4B: INDIVIDUAL MEAN NUTRIENT INTAKES OF URBAN CHILDREN EXPRESSED AS PERCENTAGE OF THE FAO/WHO REQUIREMENT

S/N	Age	Energy (Kcal)	Protein (g)	Calcium (mg)	Iron (mg)	Vitamin A (R.E)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Ascorbic Acid (mg)
1. Mean nutrient intake	2	988.1±32.25	13.97±4.59	434±125.9	6.5±1.06	607±166.7	0.33±0.10	0.34±0.096	4.56±1.01	18.43±3.47
FAO/WHo Requirement		1410	16.00	400-500	7	800	0.5	0.7	8.7	20
Intake as % of Requirement		70	87	87	93	76	66	49	5.3	92
2. Mean nutrient intake	2	998±450.6	14.44±4.41	421±164.6	5.9±3.11	521±446.8	0.29±0.04	0.4±0.17	5.8±2.4	25.98±2.54
FAO/WHO Requirement		1410	16.00	400-500	7	800	0.5	0.7	8.7	20
Intake as % of Requirement		71	90	84	84	65	58	57	67	130
3. Mean nutrient intake	2	952±121.7	13.04±2.64	435±106.4	6.8±1.5	616±96.0	0.33±0.25	0.33±0.05	5.9±1.2	19.44±3.23
FAO/WHO Requirement		1410	16.00	400-500	7	800	0.5	0.7	8.7	20
Intake as % of Requirement		68	82	87	97	77	66	47	6.7	97
4. Mean nutrient intake	3	1228±647.6	13.03±5.5	388±131.3	4.2±1.6	666±245.5	0.25±0.20	0.4±0.1	5.02±1.53	27.05±8.78
FAO/WHO Requirement		1410	16.00	400-500	7	800	0.5	0.7	8.7	20
Intake as % of Requirement		87	81	97	60	83	50	57	58	135.3
5. Mean nutrient intake	3	1006±240.95	14.02±4.59	363±64.24	4.6±1.68	815±95.6	0.3±0.14	0.3±0.12	5.26±1.48	19.32±4.14
FAO/WHO Requirement		1410	16.00	400-500	7	800	0.5	0.7	8.7	20
Intake as % of Requirement		71	88	91	66	102	60	43	61	97

8 Contd.

Mean nutrient intake	4	1739±734.5	15.18±5.2	381±87.1	6.4±0.6	739±62 .8	0.4±0.04	0.54±0.12	5.65±0.6	24.64±8.6
FAO/WHO Requirement		1810	20.00	400-500	7	1000	0.7	0.9	11.2	20
Intake as % of Requirement		96	76	96	91	74	57	60	50	128
Mean nutrient intake	4	1423±209.8	18.38±1.28	358±48.0	6.2±0.92	1015±150.7	0.5±0.09	0.54±0.56	5.14±.0.7	18.88±3.12
FAO/WHO Requirement		1810	20.00	400-500	7	1000	0.7	0.9	11.2	20
Intake as % of Requirement		79	92	90	89	102	69	60	46	94
Mean nutrient intake	5	1179±231.2	17.11±4.42	372±158.9	6.0±1.21	1121±226.0	0.5±0.09	0.52±0.1	7.27±1.92	18.02±11.5
FAO/WHO Requirement		1810	20.00	400-500	7	1000	0.7	0.9	11.2	20
Intake as % of Requirement		65	86	93	86	112	69	58	65	90
Mean nutrient intake	5	1679±549.04	17.58±2.52	314±25.89	6.17±1.05	990±470.3	0.5±0.05	0.32±0.05	7.04±0.5	21.16±1.89
FAO/WHO Requirement		1810	20.00	400-500	7	1000	0.7	0.7	11.2	20
Intake as % of Requirement		93	88	79	88	73	7.3	46	63	106
Mean nutrient Intake	5	1104±239.55	18.23±1.51	370±229.05	6.05±2.86	7.084379	0.54±0.05	0.63±0.14	7.03±3.2	12.11±6.54
FAO/WHO Requirement		1810	20.00	400-500	7	1000	0.7	0.9	11.2	20
Intake as % of Requirement		61	94	93	86	71	77	70	63	61

APPENDIX 5: TABLES OF STATISTICAL ANALYSIS

APPENDIX 5.1: NUTRIENT INTAKE ASSOCIATED WITH SECTORAL ZONE

Sectoral Zone	Energy (Kcal)	Protein (g)	Calcium (mg)	Iron (mg)	Vitamin A (R.E)	Thiamin (mg)	Riboflavin (mg)	Niacin (Mg)	Ascorbic Acid (mg)	
Urban	1229.60	15.50	428.10	5.89	779.80	.3490	.452*	5.867	20.63	
Rural	1019.30	13.08	383.60	5.19	859.30	.3950	.350	5.510	20.35	

* Protein and riboflavin intake statistically significant at 5% level.

APPENDIX 5.2: NUTRIENT INTAKE ASSOCIATED WITH HOUSEHOLD INCOME LEVEL OF MOTHER

Income Group	Energy (Kcal)	Protein (g)	Iron (mg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	
High	1251.50	16.12*	6.02	.385	.445*	5.59	
Middle	1114.67	14.55	5.30	.363	.350	5.86	
Low	1027.33	12.33	5.41	.335	.320	5.63	

* Protein and riboflavin intake statistically significant at 5% level.

APPENDIX 5.3: TEST ON NUTRITION KNOWLEDGE AND PRACTICE OF RURAL AND URBAN WOMEN

Sectoral Zone	Average Score
Urban	15.747*
Rural	9.647

*Significant ($p < 0.05$).

APPENDIX 5.4: TYPE OF MOTHER'S WORK ASSOCIATED WITH NUTRITIONAL STATUS OF CHILDREN (2 AND 4 YR. OLDS) N = 40

Type of Work	Height (cm)	Weight (kg)	Weight for Height (Percentiles)
Paid-employed	96.23*	14.92	43.25*
Self-employed	92.72	14.30	35.25

* Significant ($p < 0.05$).

APPENDIX 5.5: LOCATION OF MOTHER'S WORK PLACE ASSOCIATED WITH CHILD NUTRITIONAL STATUS (2 YEAR OLDS) N = 36

Urban Area Location	Height (cm)	Weight (kg)	Weight for Height (percentiles)
Away from home	88.12	12.59	36.66*
Within the home	88.25	11.64	42.50
Near the home	89.84	12.61	45.00
Rural Area			
Away from home	86.36	12.31	20.83*
Within the home	88.40	13.13	40.83
Near the home	86.70	12.54	41.67

* Significant ($p < 0.05$).

APPENDIX 5.6: EFFECT OF AGE OF CHILD CARETAKER ON CHILD NUTRITIONAL STATUS (2-3 YR. OLDS) N = 40

Age of Child Caretaker	Height (cm)	Weight (kg)	Weight for Height (Percentiles)
Urban Area			
Under 18 years	92.40	13.27	33.33
Above 18 years	94.65	14.34	49.33*
Rural Area			
Under 18 years	91.83	13.12	25.40
Above 18 years	92.34	13.62	44.00*

* Significant ($P < 0.05$).

APPENDIX 5.7: HOUSEHOLD INCOME LEVEL OF MOTHERS ASSOCIATED WITH CHILD NUTRITIONAL STATUS (2 YEAR OLDS) N = 36

Income Level	Height (cm)	Weight (kg)	Weight for Height (Percentiles)
High	89.60*	12.95	43.50*
Middle	86.60	12.61	39.75
Low	87.70	12.75	34.25

* Significant ($P < 0.05$).

APPENDIX 5.8: Table of Correlations

URBAN AREA

	Weight	Height	Weight/ Height	Energy	Protein
Weight R-Value	1.0000	.9658	.9104	.5117	.7905
Sig. level	.000	.0000*	.0003*	.1306	.0065*
Height R-value	.9658	1.0000	.8646	.5421	.8434
Sig. level	.0000	.0000	.0012*	.1055	.0022*

RURAL AREA

	Weight	Height	Weight/ Height	Energy	Protein
Weight R-Value	1.0000	.9315	.1785	.6573	.7487
Sig. level	.0000	.0001*	.6217	.0389*	.0127
Height R-Value	.9315	1.000	-.0201	.6283	.8187
Sig. level	.0001	.0000	.9560	.0517	.0038*

= * Statistically significant at 5% level

Appendix 5.9.1:

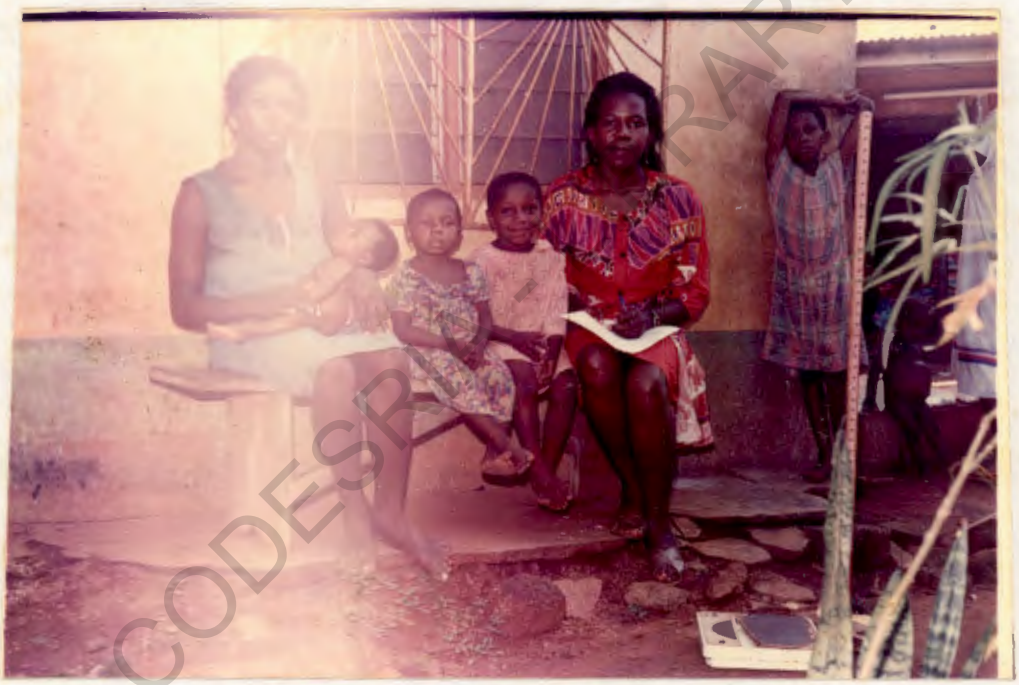
Taking the weight measurement of a pre-school child on a portable (UNICEF) scale.

Appendix 5.9.2:

Taking the height measurement of a pre-school child with a caliberated height rod.

Appendix 5.9.3:

The researcher with one of the households used for the study.



Appendix 5.9.4:

The researcher interviewing a mother.

Appendix 5.9.5:

The researcher with some pre-school children and their substitute caretakers.

THEME: WOMEN'S WORK AND CHILD NUTRITION IN RELATION TO INCOME, TIME AND CHILD CARE: A NIGERIAN CASE STUDY

WRITER: NZEKWE, V.U.

ABSTRACT

The effect of women's work on child nutrition in relation to income, time and child care was investigated in Awka and Mgbakwu communities of Anambra State, in Nigeria. Three hundred mothers of 504 pre-school children (2-5 years) were used for the study.

Questionnaire, 3-day weighed food intake and selected anthropometric indices were used for collecting data.

Results showed that all urban women and 95% of the rural women were employed. Various degrees of malnutrition was observed on the children studied. Thus, the anthropometric data of the preschool children showed that 48.2% were stunted, 22.6% wasted and 12.30% were underweight when compared with National Center for Health Statistics (NCHS) Standards.

Pre-school children from high income households had higher protein and riboflavin intakes than those from low income. Two - year old children taken care of, by child caretakers above 18 years had better weight for height measurements than those cared for, by child caretakers below 18 years in both urban and rural areas.

Time allocation of the women studied showed that majority of them spent more time on income generating activities than on household activities.