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Maternal Employment and Dietary Quality of Children Aged 42-60 Months

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To the Graduate Council:

I am submitting herewith a thesis written by Lynn A. Samson entitled "Maternal Employment and Dietary Quality of Children Aged 42-60 Months." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Nutrition.

Jean D. Skinner, Major Professor

We have read this thesis and recommend its acceptance:

Betty R. Carruth, Priscilla Blanton

Accepted for the Council:


Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

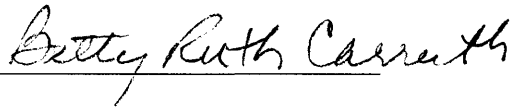
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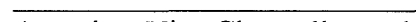

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recommend its acceptance:





Acceptance for the Council:


Associate Vice Chancellor and
Dean of the Graduate School

MATERNAL EMPLOYMENT AND DIETARY QUALITY OF
CHILDREN AGED 42-60 MONTHS

A Thesis

Presented for the

Master of Science Degree

The University of Tennessee, Knoxville

Lynn A. Samson

August 1999

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PART I

LITERATURE REVIEW

INTRODUCTION

Prior to industrialization in the United States, the working woman was more the usual than the exception.¹ The Industrial Revolution brought about a separation of home and work. The women's role was to take care of the home and family, while the men worked outside of the home.¹⁻³ Few women were employed outside of the home during this time period,¹ with only approximately 4.6% of married women in the workforce in 1890.⁴ However, working has not always been a choice for some women, and many women have had to work out of financial necessity.¹ Women's participation in the work force increased during World War II because of the demand for goods and services. This continued after the war, when women would typically resume working once their children were grown.^{5,6} The number of mothers with young children entering the work force has steadily increased.^{1,7} Rates of employment for women with children under the age of six have risen from 30% in 1970 to 63% in 1996.⁸ It is relevant to examine who these mothers are and why so many of them are choosing employment.

EMPLOYED MOTHERS

DETERMINANTS OF MATERNAL EMPLOYMENT

Several researchers have examined the determinants of maternal employment. Leibowitz and Klerman⁷ looked at the employment status of married mothers with preschool children under the age of three. They found that as the number of children in the family increased, the likelihood of maternal employment decreased. A higher level of education increased the rate of employment for mothers, and older mothers were more often employed compared to younger mothers. These variables coincide with trends, seen from 1971 to 1990, of family downsizing, increases in mothers' average education, and increases in the average age of new mothers.⁷ Other researchers have reported similar findings, especially in the increase in maternal education and decrease in family size.⁹⁻¹¹

Eggebeen¹² examined the factors related to employment for mothers of white preschool children from 1960-1980, using U.S. census data, to determine the probability of a preschool child having a working mother. He also found that employed mothers of young children are better educated and have fewer children. Other important factors influencing maternal employment included mother's age and other family income.

CHANGES IN EMPLOYMENT OVER TIME

It is not uncommon for women to enter and exit the work force repeatedly for various reasons.^{13,14} Women may make a career change, have their positions terminated, or go

back to school.¹³ The same could be true for men, but some women also choose to discontinue working for a short time or permanently after having a baby.¹³ Since there is a fluctuation in employment status among women for various reasons, the number of women in the work force may be underestimated. In 1981-1982, 26% of women changed their employment status at least once.¹⁵

Part-time work is an attractive option for many working mothers.⁹ According to the 1990 Census, approximately 38% of women were working part-time.⁹ Blank¹⁴ studied the role of part-time work in a large sample of women aged 18 to 60 using survey data from 1976 to 1984. Blank¹⁴ found that over the nine year survey period, approximately 75% of the women remained in the same type of employment status (full-time, part-time, or unemployed) indicating that women tend to stay in the same type of employment category over time. However, she did find that women who are involved in part-time work are more likely to change jobs over time than are women who work full-time. No clear pattern emerged for the use of part-time work for the women studied. Some women used part-time work as an alternative to full-time employment, while others chose part-time work as an alternative to not working outside of the home. Mothers were more likely to discontinue working as the number of preschoolers increased.¹⁴

WORKLOADS OF MOTHERS

Many women bear the responsibility for the majority of domestic work. When a couple has a child, then the mother usually takes on the traditional role of housewife and nurturer, even in very egalitarian marriages.¹⁶ Household tasks are commonly divided

among gender lines.¹⁶ Researchers have found that women, on average, perform about 64% of the total housework, although there is a great deal of variability among couples.

17,18

Schafer and Schafer¹⁹ examined the relationship between 336 husbands and wives and various food roles including: food selection, preparation, and the effects on marital interactions. The couples interviewed varied in life-stages consisting of young families with young children, maturing families with children in school, middle-aged families with no children in the home, and retirement families with no children in the home. In this study, both husbands and wives believed that the wives were primarily responsible for food-related roles. Both genders assumed that wives should cook most of the time. Retired husbands tended to be more involved in the food purchase decisions and the grocery shopping, possibly because they had more time to participate in these activities. Women who were employed outside of the home felt that their husbands should have a more active role in the cooking, compared to women who were not employed outside of the home. However, even though the expectations of employed wives were higher, their perceptions of their husbands involvement was not significantly different than that of the unemployed wives. Husbands of employed wives indicated that they were more involved in preparation of food compared to husbands of unemployed wives. Younger husband and wife couples in the study perceived that husbands should take more of a responsibility for the cooking. However, the wives' employment status did not significantly impact the distribution of food roles among husbands and wives.

Harnack and others²⁰ explored the role of men in meal planning, shopping, and

food preparation using data from the U.S. Department of Agriculture's 1994 Continuing Survey of Food Intakes of Individuals (CSFII). The sample consisted of 1,204 males who were heads of the household and residing with a female head of the household. The sample was divided by age of the male head of the household, percent of the poverty level, employment status of the female, and household size. Men reported their participation in meal planning, shopping, and food preparation at 23%, 36%, and 27%, respectively. Women's participation in these tasks was much greater with their participation in meal planning, shopping, and food preparation reported at approximately 93%, 88%, and 90%, respectively. Younger men and men with lower incomes were more likely to be involved in meal planning. Men whose wives were employed full-time were two times as likely to be involved in meal planning. Little difference in involvement with meal planning was found for males living with a female head of the household who was employed part-time compared to a female who was unemployed. Men with smaller family sizes were much more likely to be involved in planning, shopping, and food preparation. Men with lower incomes were more likely to be involved in both the shopping and food preparation. Few differences were seen between the male's involvement in the shopping and the female's employment status. However, men who resided with women who worked full-time were approximately twice as likely to be involved in food preparation.

Technological advances, convenience foods, and various other factors have improved the lives and decreased the workloads of both employed and unemployed married women.²¹ The primary determinant that influences the workloads of married

women is work status, with full-time employed women contributing the most to the total workload.²¹

BENEFITS OF MOTHERS' EMPLOYMENT

Many mothers choose to work out of personal preference and job satisfaction.^{22,23}

Employed mothers benefit from work outside the home, reporting a more desirable physical and emotional health status than women who are full-time homemakers.²⁴ Other benefits of maternal employment provided include increased self-esteem and stimulation, an outlet from the repetitive tasks of housework, and a stress buffer.²⁵ Alvarez²³ examined the motivation of work for mothers. Eighty-five percent of the employed mothers in the sample reported working partially by choice, with 59% of these mothers making a personal choice to work, while the rest chose to work mostly for financial reasons. He also found that most of the part-time employed mothers were working out of personal preference. Eighty-one percent of the working mothers in the study stated that they were generally satisfied with their employment.

STRESSORS OF EMPLOYED MOTHERS

One of the greatest burdens for working mothers with young children can be role strain, the struggle between the roles of employee and mother. These mothers are responsible for commitments to both home and jobs.^{2,26} Employed mothers often worry about the effects their work will have on their children and on accessibility and quality of child care arrangements.^{2,26} Ross and Mirkowsky²⁶ evaluated child care and emotional

adjustment to wives' employment in a national probability sample of 680 husbands and wives. These researchers measured depression using the Center for Epidemiology Studies Depression Scale. Participants were asked questions about the caretaking of the children and the difficulties in arranging child care. Results indicated that working mothers of young children who have trouble in arranging child care have, on average, higher levels of depression. They also found that the husbands' aid in child care arrangement can decrease the strain of arranging child care.

The employment preference of a mother can sometimes add to her stress. Mothers who would prefer to be at home with their children, but have to work for a variety of reasons, may feel an increased amount of guilt and anxiety. DeMeis and coworkers²⁷ examined the employment preference and separation anxiety from first-born children in 26 well-educated older working mothers, who preferred employment, compared to 36 well-educated working mothers who preferred to stay at home. These two groups were not significantly different for any demographic characteristics. Measurements included a maternal separation anxiety scale, maternal role investment scale, and a career salience questionnaire. Mothers who were employed, but preferred to stay at home, were more committed to the maternal role compared to mothers preferring employment ($p < .05$), and home-preferred mothers were not as dedicated to their careers as the mothers who preferred employment ($p < .05$). Mothers who wanted to work outside the home had lower levels of separation anxiety than those mothers who would have preferred to stay home ($p < .05$).

MOTHERS' EMPLOYMENT AND THE EFFECTS ON THE FAMILY

INFLUENCE OF MATERNAL EMPLOYMENT ON MALE PARENTING

When women work, they have less time to tend to the needs of their children and families. In this case, fathers would be expected to carry some of the extra burden.

Bailey²⁸ conducted a four year study of fathers involvement in caregiving of their young children and the effect of maternal employment on this caregiving. Fathers were more likely to be involved with caregiving when mothers were employed ($p < .01$). When the mothers had less time available, then fathers were more involved in caregiving ($p < .05$). However, maternal employment can be difficult to handle for fathers with traditional ideals of sex-roles; they have a hard time taking over some of the responsibilities of parenting.²⁹ Data from a national survey show that fathers will care for their children more often when they work different hours than their wives.³⁰

MOTHERS' EMPLOYMENT AND CHILDHOOD OUTCOMES

After thorough reviews of the literature, several researchers have concluded that no consistent causal relationship exists between maternal employment and child development.^{1,2,31} Factors that affect maternal employment, such as the family environment, child care arrangements, paternal attitudes toward mother's employment, and maternal employment satisfaction may play a more important role in childhood

outcomes.^{1,2} Researchers have consistently found less sex-role stereotyping among children whose mothers are employed.^{32,33}

Schachter³⁴ studied two groups of 32 toddlers whose mothers worked and 38 toddlers whose mothers did not work outside of the home. Subjects were matched for child's age, sex, birth order, and mother's age, race, religion, family size and social class. Schachter measured the toddlers' language, intelligence, social, and emotional development. No differences in language or emotional development were found between groups. The children whose mothers were not employed scored significantly higher on the Stanford Binet test of intelligence ($p < .05$). The children of employed mothers were more likely to associate with peers and showed significantly more self-sufficiency ($p < .05$).

Scarr and Thompson³⁵ examine the effects of maternal employment and non-maternal care on the development of children from Bermuda at two and four years of age. As part of the Screening, Assessment, and Intervention Project, children were screened at two years of age for developmental delays in cognitive, language, and behavior management. In order to measure the children's cognitive abilities, the Bayley Scales of Mental Development were administered. The researchers used the Portage Guide to Early Education Checklist to screen for language delays and the Parenting Stress Index to evaluate any behavior management problems of the children. Children at risk for any of these problems were placed in intervention programs and were reevaluated. Two samples were used for this study. The first sample included the population sample of the 1100 children who were assessed and screened for developmental delays. The second sample

for this study was composed of 122 children who failed one or more parts of the screening and assessment and had been placed in the intervention phase. Twenty children who had passed all of the screening and assessments acted as controls, and 20 children who had failed some part of the screening, but had passed all assessment measures, were added for comparison. Infants whose mothers worked equal to or greater than 20 hours per week were compared to infants whose mothers worked less than 20 hours a week to determine if maternal employment had an effect on the children's development. A comparison of children who entered into non-maternal care before the age of one versus children who entered non-maternal care after one year of age was performed. Family background variables such as parental age, occupation, and education often predicted childhood outcome variables. No significant differences were found between children whose mothers were employed more than 20 hours a week and children whose mothers worked less than 20 hours a week when family variables were controlled. Similarly, entering non-maternal care before one year of age did not significantly predict child outcomes.

PERCEPTIONS ABOUT CHILDREN

Many researchers have examined the perceptions of children by working and non-working mothers, husbands, and teachers. Koniak-Griffin and Verzemnieks³⁶ found that the employment status of the mothers was not a significant influence on parental perceptions about their children. However, when they examined the data more closely, they found mothers who were not employed outside of the home reported that their

children had more problematic behaviors than did women who were employed outside of the home. Alvarez²³ surveyed 152 employed mothers on their perceptions about their three year old children. Mothers who were part-time workers, more highly educated, and had female children described their children more favorably. Mothers who found their work rewarding viewed their children more positively in spite of their work hours, education level, or gender of their child.

Like Alvarez²³, Greenberger and O'Neil³⁷ found that more highly educated mothers viewed their children more positively. However, the husbands of full-time working wives reported more problem behaviors with their children. Fathers and teachers perceived children of less-educated mothers more favorably when their mothers did not work. Accordingly, teachers perceived children of mothers who were well-educated in a more favorable light if the mothers were working. Mothers who entered and exited the workforce reported more problematic behaviors from their children.

IMPORTANCE OF HIGH QUALITY, AFFORDABLE CHILDCARE

Child care serves the purpose of supporting maternal employment and enhancing child development.³ The term “child care” encompasses various settings including both market and non-market care.^{9,31} Market care is provided by a babysitter, day care home or center, or nursery school, and all of these services include paid care. Nonmarket care includes care of the child by a relative and is usually unpaid care.⁹ The quality of care varies tremendously within and among these different settings.³¹ Child care centers have to be licensed, and family homes with more than six children usually must be licensed.

Inspections include health and safety measurements, ratios of children to adult workers, and staff training.³ In 1995, of the 21 million children under five years of age who were not enrolled in school, approximately 40% were cared for by a parent, 21% by a relative, 31% in a day care facility, 14% in day care homes, and 4% in their own homes by sitters.³⁸ Nine percent of these children had two or more child care arrangements.³⁸ The trend for home-based child care has shifted to center-based care, and more children are cared for by paid workers than by relatives.³

Quality of care is characterized by lower ratios of teachers to children, smaller group sizes, and more highly qualified teachers.^{3,31} Economic factors play a role in the type of child care utilized. Low-income families have a harder time finding affordable quality child care, and they must pay a higher percentage of their income to child care than more affluent families.³ Families with a greater number of children tend to use more relative care, since the cost of child care is so high.³ The higher the income, the lower the chance that parents will choose relative care¹⁰ and the higher the likelihood that children will be enrolled in center-based care.³

Folk and Beller⁹ examined the child care choices of mothers of preschool children using data from the National Survey of Families and Households. The data were analyzed according to employment status (part-time, full-time, or unemployed) and child care choices (market or non-market). Folk and Beller⁹ found that mothers who chose part-time employment and nonmarket child care were more likely to be white, married, Catholic, and employed in service or sales positions ($p < .05$). Mothers who were married or had a grandmother living nearby were more likely to choose part-time or full-

time nonmarket care as opposed to full-time employment with market care.

CHILDREN'S DIETARY INTAKES

CURRENT TRENDS IN CHILDREN'S DIETS

Research on the food and nutrient intakes of children in the United States has been derived mainly by governmental nationwide surveys, such as the 1987-1988 Nationwide Food Consumption Survey (NFCS)^{39,40} and the U.S. Department of Agriculture's 1989-1991 Continuing Surveys of Food Intakes of Individuals (CSFII).⁴¹ Results indicate that many children are consuming greater than 30% of their energy from fat and intakes of some vitamins and minerals are below recommended levels.³⁹⁻⁴¹ Smaller studies have also been useful in determining the food and nutrient intakes of specific populations.^{42,43}

Johnson and coworkers³⁹ used the 1987-88 NFCS data to examine nutrient intakes of 1,392 children ages 1 to 10. The children's diets were compared to current recommendations, and nutrient adequacy ratios (NARs) were used to measure diet quality. The researchers examined sociodemographic factors that may have affected the children's intakes, such as geographic region, degree of urbanization, race, household size and income, age, education, and employment status of the male and female heads of the household. The children's intakes of vitamins A, C, and E and minerals calcium, iron and zinc were below recommended levels (NAR < .77). Greater than 77% of the children consumed diets that exceeded the recommendation of 30% or less energy from fat. A majority of the sample had intakes of saturated fat and sodium that exceeded recommended levels. The age of the male and female head of the household and number

of hours they were employed were not significantly related to the nutrients of concern. Children living in rural areas had the greatest intakes of calories, total fat, saturated fat, cholesterol and sodium. Race was related to several nutrients of concern, with African American children having the highest intakes of total fat, saturated fat, cholesterol and sodium. Children living in the South had the lowest intakes of calcium, whereas children from the West had the highest intakes.

Ganji and coworkers⁴⁰ also analyzed the 1987-88 NFCS data to evaluate the food and nutrient intakes of 1 to 10 year old children. Dietary intakes of the children were compared to the Recommended Dietary Allowances (RDAs), and percentages of the RDAs were calculated. The children were divided into the age categories of 1-3, 4-6, and 7-10 year age groups to coincide with the RDA age groups. The mean daily intake of total fat and saturated fat for the sample was above recommended levels with total fat contributing 35% to 37% of total energy and saturated fat contributing 13% to 14% of total energy. Energy intakes were below the RDA for each of the three age groups. Most vitamins and minerals were above the RDA for all age groups except for vitamin E, calcium, iron, and zinc. Vitamin E and zinc were below the RDA for all age groups, averaging from 65% to 91% and 58% to 92%, respectively. Calcium and iron were low in the 1-3 year age groups with a mean of 84% of the RDA for both minerals.

Munoz and others⁴¹ compared the food intakes of 3,307 children, ages 2 to 19, with the Food Guide Pyramid recommendations using data from the U.S. Department of Agriculture's 1989-91 CSFII. The purpose of the study was to identify specific food patterns and assess nutrient intake of children in the United States. The recommended

number of servings from each of the food groups in the Food Guide Pyramid was based on three levels of energy intake: 1600 kcalories a day, 2200 kcalories a day, 2800 kcalories a day. Standard serving sizes were used for children over 3 years of age and for children 2 to 3 years of age who consumed greater than 1600 kcalories a day. If a 2 to 3 year old was not consuming this amount, then serving sizes were set at two-thirds the size with the exception of the dairy group. Only about 30% of the children met the recommendations for each of the fruit, grain, dairy, and meat groups, while about 36% met the recommendations for vegetables. Overall, only 1% of the sample met all of the recommendations for all 5 food groups, and only 5% met the recommendations for four or more food groups. Sixteen percent of the sample did not meet the recommendations for any of the food groups. None of the children in the 2 to 5 year old age groups met all of the recommendations for the 5 food groups. The children who met the recommendations for all groups achieved the RDA for all nutrients and had the highest total fat intake. The average fat intake of the sample averaged about 35% of total energy, which is above recommendations.

Wolfe and coworkers⁴² examined the food patterns and diet quality of 1,179 second and fifth graders in New York state (excluding New York City). A non-quantitative 24-hour food recall was taken from each child. In order to assess diet quality, the researchers examined food-group patterns, consumption of breakfast, consumption of vegetables (excluding potatoes or tomato sauce), food diversity scores, and number of snack foods eaten. The food group pattern scores ranged from good if a child ate all four food groups two or more times each to poor if one or more of the food

groups was missing or if two or more of the groups were eaten only one time each. The food diversity score consisted of the number of different foods in the one day period. Each of the diet diversity indexes was examined for prediction by grade, gender, race, SES, family structure, and maternal employment. Forty-four percent of the children had a good food-group pattern compared to 13% who had a poor pattern. Girls in the high SES group had lower food group pattern scores than low SES girls; however, no difference was found for boys. Children whose mothers were employed outside of the home and low SES children had lower food diversity scores, but the differences were not significant. Children from the high SES group ate significantly ($p < .01$) more snack foods than children from a lower SES background. African American children whose mother were employed outside of the home tended to consume more snack foods than white children whose mothers were also employed outside of the home.

DIETS OF EMPLOYED AND UNEMPLOYED WOMEN'S CHILDREN

The issue of maternal employment and the quality of children's diets has not been extensively examined. Researchers have focused on maternal employment and child nutrition in younger children using nationwide survey data,^{44,45} in developing countries,⁴⁶⁻⁴⁹ in families with single mothers,⁵⁰ and in families with adolescents.^{51,52} The results of these studies have been inconsistent, but the majority of the studies showed that maternal employment was not detrimental to the diet quality of children studied.^{44,45,48,49,51,52}

Johnson and others⁴⁵ examined the effect of maternal employment on the quality of children's diets using data from the USDA's 1985 CSFII. The diets of 250 children

aged 2 to 5 years old were examined using 4 non-consecutive 24-hour dietary recalls gathered over a one year period. Maternal employment status was only collected at the first interview. Twenty percent of mothers were employed full-time (≥ 35 hours per week), 23% were employed part-time (< 35 hours per week), and 57% were unemployed. Dietary adequacy was measured using NAR scores of 13 nutrients based on age-appropriate RDAs. A mean adequacy ratio was calculated for calcium, iron, and zinc because these are three nutrients of concern for this age group. As another measure of diet quality, percentages of energy from fat, saturated fat, total cholesterol, and sodium intake were assessed to examine nutrient overconsumption. To determine if a relationship existed between the measures of diet quality and maternal employment, a multiple regression analysis was performed. The demographic and social variables that were controlled included: household income, maternal age and education, target child's age, household size, presence or absence of a male head of the household, and number of meals eaten away from home. A significant relationship ($p < .001$) was discovered between maternal employment and mean household income, mean number of meals eaten away from home by the children, and mean household size. However, when these variables were analyzed with the dietary variables no significant differences were found. Maternal employment was not significantly related to any of the nutrient adequacy or the nutrient overconsumption measures. The researchers concluded that maternal employment had no detrimental effects on the diet quality of children in this age group.

Johnson and coworkers⁴⁴ also examined the issue of maternal employment and the quality of children's diets using the 1987-88 NFCS data. Three days of dietary

information was collected from 442 children aged 2 to 5. Maternal employment status was broken down into three categories: employed full-time (≥ 35 hours per week), employed part-time (1 to 34 hours per week), and unemployed. The sample of employed full-time, employed part-time, and unemployed was 27%, 18%, and 53%, respectively. Two percent of the sample was employed but not presently working. In order to assess diet quality, the researchers calculated nutrient adequacy ratios (NAR) and mean adequacy ratios (MAR15) for 15 essential nutrients and examined nutrient overconsumption of fat, saturated fat, cholesterol, and sodium. MAR scores (MAR4) were also calculated for vitamin E, calcium, iron, and zinc because the intakes of these nutrients were less than adequate for 50% of the population. The researchers controlled for the same variables as in the previous study. Johnson et al found that the relationship between maternal employment status and children's diet quality did not differ by any of the social or demographic variables. "Meals away from home" was significant in the regressions analysis and it correlated with maternal employment. The researchers then divided "meals away from home" into: school and day-care center meals, restaurant meals, and other locations (at baby-sitters' or relatives houses). Number of meals eaten at restaurants was not significantly different by employment status. Children of employed mothers consumed more meals at school and day-care centers. MAR scores increased significantly (MAR15, $r = .105$, $p = .014$; MAR4, $r = .120$, $p = .006$) as the number of meals eaten at school or a day-care center increased. Eighty-two percent of the children had a total fat intake that exceeded the recommendation of 30% of fat from total kcalories. The majority of the children had intakes of vitamin E, calcium, iron, and zinc

that were below recommended levels. Regardless of the dietary problems of the children sampled, children's diet quality was not directly related to maternal employment status.

Researchers have examined maternal employment and the nutritional status of children in developing countries.⁴⁶⁻⁴⁹ Maternal employment was associated with both poor nutritional outcomes for some children studied⁴⁷ and improved nutritional outcomes for others.^{48,49} Islam and coworkers⁴⁷ examined various maternal and socioeconomic factors in relation to the risk of severe malnutrition in children from Bangladesh. One hundred and twenty-five severely malnourished children were matched with the same number of controls for gender, disease type, and age. The maternal and socioeconomic factors that were significantly associated with severe malnutrition in the severely malnourished children included: maternal employment, absence of breastfeeding, maternal malnutrition, poor family income, and unhygienic water and facilities. Mothers who were employed were five times as likely to have severely malnourished children ($p < .001$).

Lamontagne and others⁴⁸ explored the effects of maternal employment on the nutritional status of 80 12-18 month old children from low income communities in Nicaragua. Fifty-six percent of the mothers were employed, with a majority of them working as street vendors (36%). These researchers found that children whose mothers were employed had better height and weight measurements than children whose mothers were not employed when both controlling and not controlling for SES, maternal education, financial support by the child's father, child care adequacy, and gender and age of the child. Children of working mothers who had inadequate care had lower

heights and weights.

Similarly, Tucker and Sanjur⁴⁹ studied maternal employment and child nutrition in 150 Panamanian children aged 3 to 5 years old. Weighed food records and observations of time use by mothers and other caregivers were collected. Maternal education was significantly higher in the employed mothers compared to the unemployed mothers ($p<.0001$). No significant differences were found in nutrient intakes between the children of employed mothers compared to unemployed mothers. However, the employed mother's children had higher average intakes of energy, protein, calcium, and iron. The decreased time spent in the home due to outside employment may have been compensated for in this population by substitute care. The extra income of the working mothers seemed to play a role in the dietary intakes of the children with working mothers.⁴⁹

Single mothers often do not have the option of choosing employment, and many must work out of financial necessity. For this reason, children of single mothers may be more vulnerable to nutritional inadequacies depending on certain variables such as the family setting, influence of the mother's job, and child care arrangements.⁵⁰ Campbell and Sanjur⁵⁰ examined the influences of maternal employment, child care, and family settings on the nutrition status of 160 two to four year old children in Canada. Dietary diversity and dietary quality scores were calculated for each child. Other measures included frequency of negative child feeding practices and mother's perceived job and family role strain. Characteristics of the sample included: childcare (licensed vs. non-licensed, satisfaction, number of children in childcare), work (number of hours, schedule,

control, satisfaction, attitude towards employment, years on the job), and home/family (number of children, mother's age, child's age, income). Higher levels of strain were associated with greater number of work hours, more negative attitudes toward working, and lower levels of satisfaction at work. Mothers who had older children and who were younger were more likely to use better child feeding practices ($p < .05$). Higher dietary diversity scores were related to greater income, greater number of child care arrangements since birth, and licensed child care settings. More negative feeding practices were also associated with higher dietary diversity scores ($p < .01$). Dietary diversity arose as the key variable in determining various factors on child nutrition.

In order to explore the relationships between maternal employment and dietary quality of adolescents' diets, Skinner and coworkers⁵¹ studied the nutrient intakes and meal patterns of 123 adolescents whose mothers were working and 88 adolescents whose mothers were not working outside of the home. Dietary quality was measured using 2/3 of the RDA for energy and eight nutrients and 2/3 of nutrient intakes per 1000 kcalories. Meals and snacks were determined depending on the time of the eating occasion and on the foods consumed. Fifty-eight percent of the adolescents' mothers were employed. Iron intakes per 1000 kcalories revealed that adolescents whose mothers were not employed had significantly higher ($p \leq .05$) iron intakes than adolescents whose mothers were employed outside of the home. No significant differences were found between the adolescents whose mothers were employed and those whose mothers were unemployed for either the dietary score or the dietary score per 1000 kcalories. The meal patterns of the two groups were not significantly different in that there were no differences in the

number of adolescents skipping breakfast, the number of snacks eaten, or in the number of evening meals eaten away from home. The authors concluded that few differences existed between the nutritional quality of the diets of teenagers whose mothers were employed compared to those whose mothers were not employed.

MOTHERS' EMPLOYMENT AND PATTERNS RELATED TO FOOD AND NUTRITION

Many factors play a role in the food choices that working mothers make for their families. Gillespie and Achterberg⁵³ studied family interaction patterns, which related to food and nutrition, and attitudes toward nutrition in two different samples of parents. The two groups included a cross-sectional sample of parents and a self-selected sample of parents participating in a nutrition education program. Parents were asked about discussions on food and nutrition in their families in order to measure nutrition interaction behavior. The Sims' 10-item attitude scale was used to measure the attitudes of parents toward the importance of nutrition. The education and income levels of the parents were significantly ($p < .001$) higher in the self-selected sample compared to the cross-sectional sample. More than half of the mothers in the two samples were employed; however, more mothers from the cross-sectional sample were employed full-time (28.6% vs. 19.9%). Ninety-five percent of the mothers in the cross-sectional sample reported almost always eating dinner with their children. Attitudes towards the importance of nutrition were significantly ($p < .001$) higher for the self-selected group of parents than for cross-sectional sample. Mothers in the self-selected group discussed food and nutrition topics

more often than mothers of the cross-sectional sample. Mothers who were employed part-time had the highest scores for nutrition attitudes and interaction behavior. Possibly mothers who work part-time have outside stimulation and interaction, while having more time to devote to food and nutrition at home.⁵³

Since mothers' employment status may be related to attitudes about nutrition and the amount of discussion of nutrition related topics within the family⁵³, it is important to examine the factors that influence food choices of employed mothers with young children.⁵⁴ Kirk and Gillespie⁵⁴ utilized focus group discussions and probing techniques to assess the factors that affected the food choices of 39 working mothers. Fifty-three percent of the mothers worked full-time while the others were employed part-time. A qualitative research approach was used to analyze the data and five different perspectives were identified affecting working mothers' food choices: "nutritionist" perspective, "economist" perspective, "manager/organizer" perspective, "meaning-creator" perspective, and "family diplomat" perspective. From the nutritionist perspective, mothers' food choices were based on the health status and well-being of the family. The economist perspective included modifying food choices based on the family income. The manager/organizer perspective was similar to the economist in that it pertained to planning and allocating time and resources for food choices. Mothers might use more convenience foods during the week and do more cooking on the weekend. For the meaning-creator perspective, mothers saw food as a way to bring the family together and build relationships. The last perspective which emerged was the family diplomat perspective. Food choices were made to avoid hassles or disagreements and food

preferences and were taken into account. Many mothers also reported a sense of guilt related to family mealtime. Some mothers reported giving food, such as sweets, to their children to compensate for their absence.

Anliker and coworkers⁵⁵ assessed 104 mother-child pairs for maternal control over their three-year-old children's food intake and involvement in food-related activities. These researchers collected information on mother's reports of their children's involvement in food-related activities and control over food, maternal demographic information (including maternal employment), child-care arrangements, and evaluations of the children's nutrition awareness. The mothers were mostly Caucasian and fairly well educated. Forty-seven percent of the mothers were not employed outside of the home, while 30% worked full-time and 12% worked full-time. The rest of the mothers were students. Results indicated that mothers who were employed outside of the home ($p<.001$), who had higher education levels ($p<.05$), and who were more permissive mothers ($p<.001$) gave their children more control over the foods they consumed. Children whose mothers worked had significantly ($p<.05$) more control over the amounts of foods they ate. Children who were more involved in food-related activities scored higher in total nutrition awareness.

Touliatos et al⁵² examined the family and child correlates of nutrition knowledge and dietary quality in a sample of 97 fifth and seventh grade students. Sixty-six percent of the mothers of the children were employed outside of the home. Nutrition knowledge was examined by assessing the knowledge of the four food groups in relation health and well-being. Dietary quality was determined using a 24-hour recall to calculate the

number of different food groups eaten and the number of certain foods eaten, such as citrus fruits or dark green vegetables. Results showed that children who were younger and more intelligent, who had the least nutrition knowledge, and whose mothers were employed scored better on dietary quality. The older, more intelligent participants scored higher on nutrition knowledge, but had less adequate diets. Therefore, maternal employment was associated with dietary quality and not with nutrition knowledge.

When mothers are employed outside of the home, they have less time to spend on meal preparation and other household activities. Ortiz and others⁵⁶ examined the effect of mothers' employment on meal preparation time, meals eaten at home and meals eaten away from home in 120 families with children on varying ages. Sixty-seven percent of the mothers sampled were employed. Mothers who had children under one year of age were less likely to be employed, whereas mothers whose husband's income was low and whose children were teenagers were more likely to be employed. Mothers who worked part-time spent significantly ($p < .001$) less time in food preparation than mothers who were not employed and mothers who were employed full-time spent even less time in food preparation than mothers who worked part-time ($p < .001$). Mothers' employment did not significantly affect meals eaten together at home. However, families with full-time employed mothers ate significantly ($p < .001$) more meals away from home than part-time and unemployed mothers. Meals eaten away from home increased with increasing income.

SUMMARY

Maternal employment is becoming more the usual than an exception. Employment can be beneficial for mothers, providing satisfaction and increasing self-esteem. On the other hand, it can be stressful juggling between the roles of employee and mother. Other family members might help ease some of the burden, but mothers still bear most of the responsibility of child care and household responsibilities. Working mothers have less time to spend on food and nutrition. In most cases, the diets of children whose mothers are employed do not differ from children of mothers who are not employed, but this subject has not been extensively examined.

The purpose of this literature review on maternal employment and dietary quality of children was to explore reasons why mothers choose or do not choose employment, how maternal employment impacts family members including children, and how the dietary quality of children whose mothers are employed compares to children of non-working mothers. Women's participation in the workforce has steadily increased and this increase will likely affect the lives of children. The final chapter of this thesis will describe the dietary quality of children of employed and unemployed mothers over a year and a half time period. This study was designed to determine differences in nutrient intakes, dietary variety, and eating occasions away from home of children with employed mothers compared to children of unemployed mothers.

REFERENCES

1. Dubowitz H, Newberger CM, Melnicoe LH, Newberger EH. The changing American family. *Pediatr Clin North Am* 1988;35:1291-311.
2. Zambrana RE, Hurst M, Hite RL. The working mother in contemporary perspective: a review of the literature. *Pediatrics* 1979;64:862-70.
3. Scarr S. American child care today. *Am Psychol* 1998;53:95-108.
4. Davis K. Wives and work: the sex role revolution and its consequences. *Pop Dev Rev* 1984;10:397-417.
5. Sweet JA. Labor force re-entry by mothers of young children. *Soc Sci Res* 1972;1:189-210.
6. Oppenheimer VK. Demographic influence on female employment and the status of women. *Am J of Soc* 1973;78:946-61.
7. Leibowitz A, Klerman JA. Explaining changes in married mothers employment over time. *Demography* 1995;32:365-78.
8. Hayghe HV. Developments in women's labor force participation. *Monthly Labor Rev* 1997;120:41-6.
9. Folk KF, Beller AH. Part-time work and child care choices for mothers of preschool children. *J Mar Fam* 1993;55:146-57.
10. Blau DM, Robbins PK. Child care demand and labor supply of young mothers over time. *Demography* 1991;28:333-51.
11. Smith JP. Female labor supply: theory and estimation. Princeton, NJ: Princeton

University Press,1980.

12. Eggebeen DJ. Determinants of maternal employment for white preschool children: 1960-1980. *J Mar Fam* 1988;50:149-59.
13. Stipp HH. What is a working woman? *Am Demographics* 1988;10;24-7.
14. Blank RM. The role of part-time work in women's labor market choices over time. *AEA papers and proceedings* 1989;79:295-9.
15. Bianchi SM, Spain D. *American women in transition*. New York:Russell Stage Foundation, 1986.
16. Steil JM. *Marital Equality: its relationship to the well-being of husbands and wives*. Thousand Oaks: Sage, 1997.
17. Ferree MM. The gender division of labor in two-earner marriages. *J Fam Iss* 1991;12:158-80.
18. Nyquist L, Slivken K, Spence J, Helmreich RL. Household responsibilities n middle-class couples: the contribution of demographic and personality variables. *Sex Roles* 1985;12:15-34.
19. Schafer RB, Schafer E. Relationship between gender and food roles in the family. *J Nutr Educ* 1989;21:119-26.
20. Harnack L, Story M, Martinson B, Newmark-Sztainer D, Stang J. Guess who's cooking? The role of men in meal planning, shopping, and preparation in US families. *J Am Diet Assoc* 1998;98:995-1000.
21. Hefferan C. Workloads of married women. *Fam Econ Rev* 1982;3:10-15.
22. Eggebeen DJ, Hawkins AJ. Economic need and wives' employment. *J Fam Iss*

- 1990;11:48-66.
23. Alvarez WF. The meaning of maternal employment for mothers and their perceptions of their three-year-old children. *Child Dev* 1985;56:350-60.
 24. Barnett RC, Baruch GK. Social roles, gender and psychological distress. In: Barnett RC, Biener L, Baruch GK, eds., *Gender and stress*. New York: Free Press;1987:122-43.
 25. Hoffman LW. Effects of maternal employment in the two-parent family. *Am Psychol* 1989;44:283-92.
 26. Ross CE, Mirkowsky J. Child care and emotional adjustment to wives' employment. *J Health Soc Behav* 1988;29:127-38.
 27. DeMeis DK, McBride SL, Hock E. The balance of employment and motherhood: longitudinal study of mothers' feelings about separation from their first-born infants. *Dev Psychol* 1986;22:627-32.
 28. Baily WT. A longitudinal study of fathers' involvement with young children: infancy to age 5 years. *J Genet Psychol* 1994;155:331-9.
 29. Kessler RC, McRae JA, Jr. The effects of wives' employment on the mental health of married men and women. *Am Psychol Rev* 1982;47:216-27.
 30. Brayfield A. Juggling jobs and kids: the impact of employment schedules on fathers' caring for children. *J Mar Fam* 1995;57:321-32.
 31. Scarr S, Phillips D, McCartney K. Working mothers and their families. *Am Psychol* 1989;44:1402-9.
 32. Bacon C, Lerner RM. Effects of maternal employment status on the development of

- vocational-role perception in females. *J Genet Psychol* 1975;126:187-93.
33. Marantz S, Mansfield A. Maternal employment and the development of sex-role stereotyping in five to eleven year old girls. *Child Dev* 1977;48:668-73.
 34. Schachter FF. Toddlers with employed mothers. *Child Dev* 1981;52:958-64.
 35. Scarr S, Thompson WW. The effect of maternal employment and non-maternal infant care on development at two and four years. *Early Dev Parenting* 1994;3:113-23.
 36. Koniak-Griffin D, Verzemnieks I. The relationship between parental ratings of child behaviors, interaction, and the home environment. *Matern-Child Nurs J* 1995;23:44-56.
 37. Greenberger E, O'Neil R. Maternal employment and perceptions of young children: Bronfenbrenner et al revisited. *Child Dev* 1992;63:431-48.
 38. *Hofferth S. Child care in the United States today. *Future Child* 1996;6:41-61.
 39. Johnson RK, Guthrie H, Smiciklas-Wright H, Wang MQ. Characterizing nutrient intakes of children by sociodemographic factors. *Public Health Rep* 1994;109:414-20.
 40. Ganji V, Betts N, Whitehead D. Nutrient intakes of 1-3, 4-6 and 7-10 year age group children: analysis of diets reported in 1987-88 nationwide food consumption survey. *Nutr Res* 1995;15:623-31.
 41. Muñoz KA, Krebs-Smith SM, Ballard-Barbash R, Cleveland LE. Food intakes of US children and adolescents compared with recommendations. *Pediatrics* 1997;100:323-9.
 42. Wolfe WS, Campbell CC. Food pattern, diet quality, and related characteristics of schoolchildren in New York State. *J Am Diet Assoc* 1993;93:1280-4.

43. Skinner JD, Carruth BR, Houck KS, et al. Longitudinal study of nutrient and food intakes of infants 2-24 months. *J Am Diet Assoc* 1997;97:496-504.
44. Johnson RK, Smiciklas-Wright H, Crouter AC, Willits FK. Maternal employment and the quality of young children's diets: empirical evidence based on the 1987-1988 nationwide food consumption survey. *Pediatrics* 1992;90:245-9.
45. Johnson RK, Smiciklas-Wright H, Crouter AC. Effect of maternal employment on the quality of young children's diets: the CSFII experience. *J Am Diet Assoc* 1992;92:213-4.
46. Engle PL. Maternal work and child-care strategies in peri-urban Guatemala: nutritional effects. *Child Dev* 1991;62:954-65.
47. Islam MA, Rahman MM, Mahalanabis D. Maternal and socioeconomic factors and the risk of severe malnutrition in a child: a case--control study. *Eur J Clin Nutr* 1994;48:416-24.
48. Lamontange JF, Engle PL, Zeitlin MF. Maternal employment, child care, and nutritional status of 12-18-month-old children in Managua, Nicaragua. *Soc Sci Med* 1998;46:403-14.
49. Tucker K, Sanjur D. Maternal employment and child nutrition in Panama. *Soc Sci Med* 1988;26:605-12.
50. Campbell ML, Sanjur D. Single employed mothers and preschool child nutrition – an ecological analysis. *J Nutr Educ* 1992;24:67-74.
51. Skinner JD, Ezell JM, Salvetti NN, Penfield MP. Relationships between mothers' employment and nutritional quality of adolescents' diets. *Home Econ Res J*

1985;13:218-25.

52. Touliatos J, Lindholm BW, Wenberg MF, Ryan M. Family and child correlates of nutrition knowledge and dietary quality in 10-13 year olds. *J Sch Health* 1984;54:247-9.
53. Gillespie AH, Achterberg CL. Comparison of family interaction patterns related to food and nutrition. *J Am Diet Assoc* 1989;89:509-12.
54. Kirk MC, Gillespie AH. Factors affecting food choices of working mothers with young families. *J Nutr Educ* 1990;22:161-68.
55. Anliker JA, Laus MJ, Samonds KW, Beal VA. Mothers' reports of their three-year-old children's control over foods and involvement in food-related activities. *J Nutr Educ* 1992;24:285-91.
56. Ortiz B, MacDonald M, Ackerman N, Goebel K. The effect of homemakers' employment on meal preparations time, meals at home, and meals away from home. *Home Econ Res J* 1981;9:200-6.

PART II

MATERNAL EMPLOYMENT AND DIETARY QUALITY

OF CHILDREN AGED 42-60 MONTHS

ABSTRACT

Rates of maternal employment for women with young children have risen over the past few decades, but longitudinal research on the effects of maternal employment on the quality of children's diets has been limited. To address this issue, three days of children's dietary information and maternal employment status were collected longitudinally from the mothers of 72 children aged 42, 48, 54, and 60 months. Nutrient intakes were computed using Nutritionist IV software and were analyzed for each age using two groups, employed mothers (part-time and full-time) and unemployed mothers. Variety Index for Children (VIC) scores were computed to examine dietary variety over time, and differences in nutrient intakes and VIC scores between the two groups were tested with t-tests. The number of fast food eating occasions was summed, and tests of proportions were used to determine differences between groups. Results indicated no significant differences at any of the four interviews in dietary quality (i.e. nutrient intakes, variety scores, or number of fast food eating occasions). We conclude that the quality of these children's diets was not adversely affected by maternal employment. Nutrition education messages for families with preschool children do not need to differ by maternal employment status.

INTRODUCTION

The number of mothers with young children entering the work force has steadily increased,¹ and understanding the impact of this rise in maternal employment on the children of working mothers is very important. Researchers have focused on the issue of maternal employment and child nutrition.²⁻⁶ The majority of studies concluded that maternal employment was not detrimental to children's diets.^{2,3,5,6} Few researchers have examined maternal employment and dietary quality over time. This is an important consideration because it is not uncommon for mothers to enter and exit the work force repeatedly for various reasons.⁷

Researchers have examined the determinants of maternal employment and found that the likelihood of maternal employment increases with an increase in maternal education, an increase in maternal age, and with smaller family sizes.⁸⁻¹⁰ These variables, which coincide with trends seen in the United States of family downsizing, increases in the education level of women, and increases in the average age of new mothers,⁸ may help to explain why more mothers are choosing employment than did previously. However, many women have to work out of financial necessity so paid employment is not always a choice.¹

Some mothers apparently benefit from employment outside of the home, because they report a more desirable physical and emotional health status¹¹ and have increased self-esteem and stimulation¹² than do women who are not employed outside of the home.

Conversely, employed mothers also often struggle with role strain, the conflicts between the roles of employee and mother.^{13,14} Concern about the effects of their work on their children and on accessibility of quality child care arrangements are not uncommon,^{13,14} and many employed mothers may experience a sense of guilt related to family mealtime.¹⁵ Several researchers have concluded that no consistent causal relationship exists between maternal employment and child development.^{1,14,16} No empirical evidence exists to support the common conception that maternal employment is detrimental to young children.¹⁴

Even with the increasing percentage of employed mothers, many women continue to bear the responsibility of the majority of the domestic work. Schafer and Schafer¹⁷ found that wives' employment status did not significantly impact the distribution of food roles, such as food selection and preparation, among husbands and wives. Harnack et al¹⁸ determined that women's employment did not influence male's involvement in food shopping; however, men who lived with full-time employed women were approximately twice as likely to be involved in food preparation. Mothers with a higher level of education may be more likely to give their children more control over their diet and involve them in food-related activities.¹⁹ Technological advances, convenience foods, and other factors have decreased the workloads of both employed and unemployed women.²⁰ Mothers who work outside of the home have less time to spend on meal preparation and other household activities. Ortiz²¹ found that families of full-time employed mothers ate significantly more meals away from home compared to families of part-time and unemployed mothers.

The objective of this study was to determine longitudinal differences in nutrient intakes, dietary variety, and eating occasions away from home of children with employed mothers compared to children of unemployed mothers. The differences in nutrient intakes between children of part-time employed mothers, full-time employed mothers and unemployed mothers were also examined. We hypothesized that maternal employment would not significantly affect the diet quality of the children studied.

METHODS

SAMPLE

The subjects for this study were 72 children, aged 42 to 60 months, and their mothers, who are participants in an ongoing longitudinal study from the time the children were two months to 84 months old.²² Only infants who were full-term, apparently healthy, and white were included in the sample.²² Initially, children were purposely recruited from middle and upper socioeconomic status families, and only subjects with continuous data from infancy were included in the 42 to 60 month interviews.²² Socioeconomic status (SES) was determined using the Hollingshead Index,²³ which categorizes SES from the occupation and education level of the parents. Potential scores range from 8 (low SES) to 66 (high SES). Other characteristics of the sample have been described previously.^{22,24,25}

DATA COLLECTION

Interviews were conducted by two registered dietitians (RD) when the children were 42,48,54, and 60 months of age. Two days of food records and one 24-hour recall were collected at each interview. Mothers were asked to report their employment status, occupation, education, and the number and ages of children in their families.

Mothers also reported their children's usual eating occasions away from home for the first meal of the day, morning snack, mid day meal, afternoon snack, evening meal, and evening snack and who provided the food for each of these eating occasions away from

home.

ANALYSIS

Full-time employment was classified as greater than or equal to 35 hours per week and part-time was classified as less than 35 hours per week. Mothers' occupations were categorized into similar areas which included: teachers, accountants, healthcare workers, engineers, social service positions, business owners, bank workers, housekeepers, waitresses, managers or coordinators, sales, real estate or insurance agents, models, artists or writers, and clerical workers. Percentages of mothers in each of the occupation groups were calculated by dividing the number of mothers in one category by the number of working mothers at each of the four interviews. An average education level over the year and a half time period was calculated for all mothers and an average of the number of children in each family was calculated from the 60 month data. After determining which mothers gave birth to a new baby when the subjects were between 42 to 60 months old, the mother's work status over time and whether they worked part-time or full-time were examined to look for trends to determine if mothers discontinued working when they had a new baby.

Children's diets were entered into Nutritionist IV, Version 4.1 (N-Squared Computing, The Hearst Corporation, San Bruno, CA) for nutrient analysis and the data were analyzed using SAS.²⁶ Differences in nutrient intakes at each interview time between the children of employed mothers (both part-time and full-time) and unemployed mothers were examined with t-tests. Nutrient intakes of subjects whose mothers were

employed part-time were compared to those who were employed full-time. Finally, a comparison of the nutrient intakes of subjects whose mother's were employed full-time to mothers who were not employed outside of the home was performed. A significance level of $p \leq .05$ was chosen to determine differences between groups.

The Variety Index for Children (VIC) was utilized to determine the dietary variety of the subjects.²⁴ The VIC assesses overall variety as well as variety within food groups. VIC scores were calculated for each child and t-tests were used to compare scores of subjects with employed mothers (both part-time and full-time) to subjects whose mothers were not employed at each of the four interview periods. VIC scores potentially can range from 0-1.0, with 1.0 indicating that the individual had at least the recommended minimum daily number of servings from each food group over the three-day period.

Using the three days of diet information, a total of the fast food eating occasions was calculated for each subject at the 42, 48, 54, and 60 month interviews. Fast food restaurants included those such as McDonald's, Wendy's, cafeterias, and take-out restaurants. If the diet record indicated that the child's family ate together at a restaurant, such as at Pizza Hut, then this was not included in the total. Tests of proportions were used to examine any differences in fast food eating occasions of the subjects whose mothers worked compared to those mothers who did not work outside of the home. A significance level of .10 was chosen due to the small sample size of the two groups.

Usual eating occasions away from home were analyzed according to the employment status of the mothers (employed versus unemployed). Chi square tests were used to determine differences in usual eating occasions away from home between children of

employed and unemployed mothers.

RESULTS

SAMPLE

Percentages of employed mothers were 58%, 51%, 51%, and 46% over the four interview periods, with part-time employment more usual than full-time (Table 1). A decline in the number of mothers employed was seen over the year and a half studied; however, this trend was not statistically significant.

At 60 months the mean Hollingshead Index score was 55.5 ± 10.7 (range 26-66), indicating that most children were from middle to upper SES families. Most of the mothers studied were highly educated with the average education level being “some graduate work”. The education level ranged from “some high school” to “graduate or professional training”. A majority of the mothers who were employed worked in a professional setting, such as teachers, health care workers, and managers or coordinators. Thirty-nine percent of the mothers changed jobs at least one time over the year and a half interview period. This included mothers who entered or exited the workforce or those who changed their job description at any of the four interviews.

The average number of children in the family when the subjects were 60 months old was 2.4, with a range of 1 to 5. Nineteen of the 72 mothers had new babies at one of the four interview months. One of the nine employed mothers discontinued working after having the new baby, while the rest of the employed mothers continued to be employed either full-time or part-time. Eight out of the ten unemployed mothers who had new babies during the study period did not work outside of the home at any of the four

interview periods; whereas, the other two mothers had been employed prior to having a new baby. The trends for this group do not show that most mothers stopped working when they had new babies.

NUTRIENT DATA AND DIETARY VARIETY

The nutrient intakes of the children of employed mothers were not significantly different from the children of unemployed mothers. Thus, data have been averaged over the four interviews for presentation (Table 2). This was also true when the diets were analyzed for children whose mothers worked part-time compared to full-time and children whose mother worked full-time compared to those who were not employed outside of the home. Mean energy intakes of children of employed and unemployed mothers were below recommendations.²⁷ Children from both groups did not meet the Recommended Dietary Allowances for zinc and vitamins E and D.²⁷⁻²⁹

No significant differences were found in the VIC scores of the employed mothers' children compared to the unemployed mothers' children. Thus these data were averaged over the four interviews for presentation (Table 3). The children in the two groups had similar scores for the bread, vegetable, fruit, milk, and meat groups. The children scored the lowest in the vegetable group and highest in the bread group at each interview period. These results show that the variety of foods coming from certain food groups was limited for both children of employed mothers and children of unemployed mothers.

EATING AWAY FROM HOME

No significant differences were found in the number of fast food eating occasions between children of mothers who were employed compared to children of unemployed mothers (Table 4). Both employed and unemployed mothers brought their children to similar fast food eateries, such as McDonald's, Burger King, Wendy's, Hardee's, Pizza Hut, Taco Bell, Krispy Kreme, Dunkin Donuts, concession stands, and grocery store delicatessens.

Children whose mothers were employed more frequently ate away from home (Table 5). Most of the meals eaten away from home during the day occurred at a daycare or preschool. The mid-day meal was the eating occasion most frequently eaten away from home for both groups, but approximately twice as many children whose mothers were employed ate this meal away from home (70%) compared to children whose mothers were not employed outside of the home (34%). Statistical differences were found in usual eating occasions away from home for the first meal, morning snack, mid meal ($p < .05$) and afternoon snack ($p < .0001$) between children whose mothers were employed compared to children whose mothers did not work outside of the home.

DISCUSSION

The main objective of this study was to determine longitudinally the differences in nutrient intakes, dietary variety, and eating occasions away from home of children with employed mothers compared to unemployed mothers. This information is useful for professionals and parents who are concerned about the health of young children.

Most of the mothers participating in this study were highly educated. Researchers have found that with a higher maternal education level comes an increase in the likelihood of maternal employment;^{8,10} however, the rate of maternal employment in this sample was lower than the current average of 63% for women with children under the age of six.³⁰ The sample consisted primarily of women from middle to upper SES families; therefore, the family incomes may have been sufficient for the women to choose unemployment.

Of the employed mothers in the sample, more of them chose part-time employment as opposed to full-time employment at each of the four interview periods. Typically, mothers did not discontinue employment with the birth of a child during the study period. This finding corresponds to data indicating that mothers tend to remain in the same type of employment status over time;³¹ however, it differs from data that show mothers discontinuing employment when family size increases.⁸⁻¹⁰

The finding that nutrient intakes of children of employed and unemployed mothers did not differ significantly is consistent with data from the USDA's 1985 CSFII and the 1987-88 NCFS on maternal employment and nutrient intakes.^{2,3} Unlike other research on

this topic, this study included twelve days of dietary information for each child collected and analyzed over a year and a half time period.

The average number of fast food eating occasions did not differ between children of employed and unemployed mothers. Johnson and coworkers² also found that the number of “restaurant meals” did not differ for children according to their mother’s employment status. However, in our sample a significant difference was found between the two groups for usual meals and snacks eaten away from home. Employed mothers reported their children eating most of their meals and snacks at child care facilities. Johnson and others² also found that children of employed mothers ate more of their meals at school or at child care centers. In the present sample, few children from either group ate their evening meal or evening snack away from home.

IMPLICATIONS

In recent years, the rates of employment of women with young children have risen and along with this many mothers may be experiencing role strain^{13,14} and a sense of guilt related to family mealtime.¹⁵ On the basis of data presented by the current study, employed mothers are providing their children similar nutrients and dietary variety as mothers who are not employed. Children of employed mothers ate more of their meals away from home, but most of these meals were provided by preschool or day care facilities. These types of child care facilities may make positive contributions to diet quality due to state and federal regulations. Thus, we concluded that the quality of children's diets was not adversely affected by maternal employment in this population. However, caution must be taken when generalizing the results of this study because the sample, consisting of mainly white middle/upper class children, was not representative of the general population. Although, Johnson and coworkers also concluded that maternal employment status had no detrimental effects on children's diets using the 1985 CSFII data³ and the 1987-88 NCFS data². It is the role of nutrition educators to inform the public and professionals, such as pediatricians, that diet quality of children is not negatively affected by maternal employment. Further research on the effect of maternal employment in a low income population is needed, because quality child care is not always accessible or affordable to this group.

REFERENCES

1. Dubowitz H, Newberger CM, Melnicoe, Newberger EH. The changing American family. *Pediatr Clin North Am* 1988;35:1291-311.
2. Johnson RK, Smiciklas-Wright H, Crouter AC, Willits FK. Maternal employment and the quality of young children's diets: empirical evidence based on the 1987-1988 Nationwide Food Consumption Survey. *Pediatrics* 1992;90:245-9.
3. Johnson RK, Smiciklas-Wright H, Crouter AC. Effect of maternal employment on the quality of young children's diets: the CSFII experience. *J Am Diet Assoc* 1992;92:213-4.
4. Campbell ML, Sanjur D. Single employed mothers and preschool child nutrition – an ecological analysis. *J Nutr Educ* 1992;24:67-74.
5. Skinner JD, Ezell JM, Salvetti NN, Penfield MP. Relationships between mothers' employment and nutritional quality of adolescents' diets. *Home Econ J* 1985;13:218-25.
6. Touliatos J, Lindholm BW, Wenberg MF, Ryan M. Family and child correlates of nutrition knowledge and dietary quality in 10-13 year olds. *J Sch Health* 1984;54:247-9.
7. Stipp HH. What is a working woman? *Am Demographics* 1988;10:24-7.
8. Leibowitz A, Klerman JA. Explaining changes in married mothers' employment over time. *Demography* 1995;32:365-78.

9. Blau DM, Robbins PK. Child care demand and labor supply of young mothers over time. *Demography* 1991;28:333-51.
10. Smith JP. *Female labor supply: theory and estimation*. Princeton, NJ: Princeton University Press, 1980.
11. Barnett RC, Baruch GK. Social roles, gender and psychological distress. In: Barnett RC, Biener L, Baruch GK, eds., *Gender and stress*. New York:Free Press;1987:122-43.
12. Hoffman LW. Effects of maternal employment in the two-parent family. *Am Psychol* 1989;44:283-92.
13. Ross CE, Mirkowsky J. Child care and emotional adjustment to wives' employment. *J Health Soc Behav* 1988;29:127-38.
14. Zambrana RE, Hurst M, Hite RL. The working mother in contemporary perspective: a review of the literature. *Pediatrics* 1979;64:862-70.
15. Kirk MC, Gillespie AH. Factors affecting food choices of working mothers with young families. *J Nutr Educ* 1990;22:161-8.
16. Scarr S, Phillips D, McCartney K. Working mothers and their families. *Am Psychol* 1989;44:1402-9.
17. Schafer RB, Schafer E. Relationship between gender and food roles in the family. *J Nutr Educ* 1989;21:119-26.
18. Harnack L, Story M, Martinson B, Newmark-Sztainer D, Stang J. Guess who's cooking? The role of men in meal planning, shopping, and preparation in US families. *J Am Diet Assoc* 1998;98:995-1000.

19. Anliker JA, Laus MJ, Samonds KW, Beal VA. Mothers' report of their three-year-old children's control over food and involvement in food-related activities. *J Nutr Educ* 1992;24:285-91.
20. Hefferan C. Workloads of married women. *Fam Econ Rev* 1982;3:10-15.
21. Ortiz B, MacDonald M, Ackerman N, Goebel K. The effect of homemakers' employment on meal preparation time, meals at home, and meals away from home. *Home Econ Res J* 1981;9:200-6.
22. Skinner J, Carruth BR, Houck K, et al. Longitudinal study of nutrient and food intakes of infants 2-24 months. *J Am Diet Assoc* 1997;97:496-504.
23. Hollingshead AB. Four factor index of social status. New Haven: Yale University Press 1976.
24. Skinner JD, Carruth BR, Houck KS, et al. A longitudinal study of nutrient and food intakes of preschool children, ages 24 to 60 months. *J Am Diet Assoc*. In press.
25. Skinner J, Carruth BR, Moran J, et al. Toddlers' food preferences: concordance with family members' preferences. *J Nutr Educ* 1998;30:17-22.
26. SAS Institute, Inc. SAS user's guide: basics. Cary, NC: SAS Institute, 1988.
27. Food and Nutrition Board. Recommended dietary allowances. 10th ed. Washington, DC: National Academy Press;1989.
28. Food and Nutrition Board. Dietary reference intakes of calcium, phosphorus, magnesium, vitamin D and fluoride. Washington, DC: National Academy Press;1997.
29. Food and Nutrition Board. Dietary reference intakes for thiamin, riboflavin, niacin,

- vitamin B6, folate, vitamin B12, pantothenic acid, biotin, and choline. Washington, DC: National Academy Press;1998.
30. Hayghe HV. Developments in women's labor force participation. *Monthly Labor Rev* 1997;120:41-6.
 31. Blank RM. The role of part-time work in women's labor market choices over time. *AEA Papers and Proceedings* 1989;79:295-9.

Table 1. Maternal employment according to children's age.

	Children's Age in Months			
	42	48	54	60
Mothers' ^a Work Status				
Unemployed	30 (42%)	35 (49%)	35 (49%)	39 (54%)
Employed				
Part-time ^b	22 (30%)	22 (30%)	21 (29%)	18 (25%)
Full-time ^c	20 (28%)	15 (21%)	16 (22%)	15 (21%)

^a n=72 employed and unemployed mothers

^b working < 35 hours per week

^c working ≥35 hours per week

Table 2. Mean^a energy and nutrient intakes of children^b (42 to 60 months).

Food component	Employed	Unemployed
Energy (kcal)	1496	1555
Carbohydrate (g)	211	221
Protein (g)	53	53
Fat (g)	52	54
Iron (mg)	10.1	11.0
Calcium (mg)	836	873
Zinc (mg)	7.3	7.7
Vitamin A (mcg RE)	711	739
Vitamin E (mg α -TC)	3.6	3.3
Vitamin C (mg)	73	87
Vitamin D (μ g)	4.4	5.0

^a No significant differences were found; therefore, data have been averaged over the four interviews. Data were derived from 3-day food records at each of the four interview periods; therefore, a total of twelve days of diets per child was averaged.

^bn=72 total children of employed and unemployed mothers.

Table 3. Means and standard deviations^a of food group scores used in the VIC^b for children^c of employed and unemployed mothers.

Food group	Employed (mean±SD)	Unemployed (mean±S.D.)
Bread group score	.91±.03	.92±.02
Vegetable group score	.54±.04	.52±.05
Fruit group score	.70±.04	.65±.06
Meat group score	.67±.03	.64±.04
Dairy group score	.82±.05	.84±.03
Total VIC score	.73±.01	.72±.02

^aNo significant differences were found; therefore, data have been averaged over the four interviews.

^bVariety Index for Children is based on the Food Guide Pyramid with serving sizes adjusted for children (ages 42 to 60 months). The VIC score is an average of all of the food group scores and can range from 0-1.0, with 1.0 indicating that the child has eaten the recommended minimum number of servings from each food group.

^c n=72 total children of employed and unemployed mothers.

Table 4. Children's ^a mean fast food eating occasions^b over three days

Mothers' Employment Status	Children's Age in Months			
	42	48	54	60
Employed	(n=42)	(n=37)	(n=37)	(n=33)
Unemployed	(n=30)	(n=35)	(n=35)	(n=39)
Employed	1.0	1.1	.79	1.2
Unemployed	1.3	1.1	.74	1.1

^a n=72 children at each interview time

^bMean fast food eating occasions derived from 3 day food records at each interview. No significant differences were found between the groups using tests of proportions.

Table 5. Children's usual eating occasions away from home.^a

Eating Occasion		Children's Ages at month of each interview ^b			
		42 (n=42) Unemployed (n=30)	48 (n=37) (n=35)	54 (n=37) (n=35)	60 (n=33) (n=39)
First Meal					
	Employed	5 (12%) ^c	6 (16%) ^c	8 (22%) ^c	5 (15%)
	Unemployed	0 (0%)	0 (0%)	0 (0%)	2 (5%)
Morning Snack					
	Employed	23 (55%) ^c	22 (59%) ^c	25 (68%)	18 (55%) ^c
	Unemployed	9 (30%)	9 (26%)	15 (43%)	5 (13%)
Mid Meal					
	Employed	32 (76%) ^c	24 (65%) ^c	29 (78%) ^c	20 (61%) ^c
	Unemployed	12 (40%)	9 (26%)	17 (49%)	8 (21%)
Afternoon Snack					
	Employed	25 (60%) ^d	19 (51%) ^d	20 (54%) ^d	16 (48%) ^d
	Unemployed	2 (6%)	1 (3%)	3 (9%)	0 (0%)
Evening Meal					
	Employed	1 (2%)	0 (0%)	0 (0%)	0 (0%)
	Unemployed	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Evening Snack					
	Employed	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Unemployed	0 (0%)	0 (0%)	0 (0%)	0 (0%)

^aMothers reported children's usual eating occasions away from home as part of the demographic questionnaires. Most of the meals eaten away from home occurred at a child care setting.

^bNumber of employed and unemployed mothers changed over the four interview periods.

^c $p < .05$

^d $p < .0001$

VITA

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