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ABSTRACT

The stated objectives of this study were to determine: (1) the differences in knowledge of nutrition, of income, and of family size in the upper and lower strata families; (2) the shopping practices of families; (3) average weekly food expenditures; (4) mean educational level; and (5) differences in the mean weekly food expenditures -- a comparison of the national norm mean and the standard set for this study. Findings reveal that 33 percent of the families with adequate money expenditure on food had inadequate diets, while 77 percent of the families require larger expenditures to provide adequate diets. Families with the lowest per capita incomes were found to have the most inadequate diets. Most diets were below recommended allowances of fruits, vegetables, milk, bread, and cereals. Inadequate nutrition was stated to be related more to lack of use of knowledge than to lack of knowledge itself, and to family size rather than to amount of money income. Recommendations included that further research be conducted with these families regarding dietary behavior and the application of nutrition education. (Author/AM)

ABSTRACT

A STUDY OF THE RELATIONSHIP BETWEEN THE LEVEL OF NUTRITIONAL CONSUMPTION AND THE EDUCATION, INCOME, AND FAMILY SIZE, OF SELECTED POOR FAMILIES IN ATLANTA, GEORGIA

BY

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ABSTRACT

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ABSTRACT

The purpose of this research was to examine the relationship between the level of nutritional consumption and the education, income, and family size of selected families in Atlanta, Georgia. Eighty-four families were selected and distributed by incomes into three strata.

It was hypothesized that the difference between the mean of two strata, upper and lower; $U_1 - U_2$ equaled to zero against the alternative hypothesis that it would be different from zero in knowledge of nutrition, income, and family size.

The objectives of the study were to determine:

1. The differences in knowledge of nutrition, of income, and of family size in the upper and lower strata families;
2. The shopping practices of families;
3. The average weekly food expenditures;
4. The mean educational level;

5. The differences in the mean weekly food expenditures compared with the national norm mean and the standard set for this study.

The t-test indicated that the hypothesis was rejected at the .05 level of confidence. Pearson Product-Moment Coefficient Correlation indicated that a relationship between the three variables existed.

Analysis of data revealed that although thirty-three percent of the families spent enough money to have had an adequate diet, most of their diets were inadequate. Seventy-seven percent of the families, however, would have required larger expenditures to provide adequate diets for family members. Ironically, families with the lowest incomes per capita had the most adequate diets.

Careful study of nutritional practices revealed that most diets were below recommended allowances of fruits, vegetables, milk, breads, and cereals, and above recommended amounts of green vegetables and meats. Inadequate nutrition was related more to lack of use of knowledge than to lack of knowledge itself, and to family size than to amount of money income.

It is recommended that further research be conducted with these families regarding dietary behavior and the application of nutrition education.

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F.P.D.

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CHAPTER I

THE PROBLEM AND ITS SETTING

Families throughout the world face unusual problems resulting from sociological and technological changes. Among the most prevalent changes are urbanization and industrialization which have been made possible by managerial and political skills. Regrettably, man has not developed these same skills to insure every family member an acceptable quality of life; because he has not, many families have unusual and difficult problems. Efforts to find reasonable solutions to these problems should be intensified; such efforts are crucial to the national interest. Families in the modern cities and those in inner cities have much in common as basic units. They share many of the same types of health problems such as diabetes, anemia, and high blood pressure, problems often stemming from malnutrition. These families provide rich resources for comparative studies of different dietary habits and their effects on health. They also provide avenues to the study of other types of problems growing out of the basic human needs for food, clothing, and shelter.

It appears that society has been somewhat derelict in recognizing that education regarding these basic human

needs is indispensable to an understanding of quality living in the modern world and to human survival. After World War II, man was winning the battle against hunger quantitatively. Bountiful harvests in many nations created surplus food, particularly in the Western World. However, people in the densely populated poor countries were not able to attain self-sufficiency. Presently, therefore, hunger and famine are ravaging millions of the poorest citizens in forty or more nations of the world.

Nearly half a billion people are suffering from some food deficiency. In Africa, Asia, and Latin America thousands of people are dying of starvation. Reliable reports reveal that people whose cupboards are full and who have plenty to eat often die of malnutrition because their diets provide inadequate supplies of certain essential nutrients. Even those having the knowledge of the basic nutritional needs often fail to apply the knowledge to the alteration of detrimental dietary habits and, therefore, fail to reap the benefits of what they know.

Wolgamot[1] stated that the road to better living for most of the poor families seems rocky and slow. We know that there are low-income families in the midst of our nation's general affluence, although we do not always know

[1]Mabel Wolgamot, "Low-Income Groups Opportunities Limited," Journal of Home Economics 56, No. 1 (January 1964): 27.

how many there are and who they are. Harrington[1] indicated that in the "affluent society" there was an implicit assumption that the grinding economic problems had been solved in the United States. In this theory the nation's problems were no longer a matter of the basic human needs of food, clothing, and shelter. They were seen as qualitative, a question of learning to live acceptably in the midst of abundance. All of this time there was another America of forty to fifty million citizens who were poor and still are.

Continuing growth in man's numbers and in his consumption of the earth's resources has been a cornerstone of Western man's belief in progress. According to Mead,[2] our abundance and our responsiveness to offered food have made obesity a serious problem for about fifty million Americans. At the other extreme, there are many who, in their effort not to gain weight, use reducing diets or eat fascimile foods...foods that are satisfying but not nourishing. Both types of eating habits have created vast pockets of malnutrition in the midst of our abundance.

The important role which food plays in building a strong healthy world cannot be overemphasized. The association of improper diet and malnutrition with deficiency

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[1]Michael Harrington, The Other America; Poverty in the United States (Penquin Books, Macmillan, 1962), p. 9.

[2]Margaret Mead, Encore, "The Great Challenge, Feeding the Hungry Million," Corn Products Company Encore Corn Products Company (Autumn 1962): 19.

diseases, mental problems, and work losses is a major challenge to our ingenuity and our creating a new set of food patterns. In doing so, the aim might be to foster in people, and particularly children, the ability to select for themselves a well-balanced and nourishing diet from the foods available to them. It is apparent, from much of the written literature, that serious problems affecting levels of living exist in our nation.

Secretary of State, Henry Kissinger,[1] in his address to delegates at the World Food Conference, warned that the world food crisis raised the possibility of global disaster. In addition, America needs to study how to avoid mass starvation. Secretary Kissinger linked the food crisis to population explosion.

The Southern Regional Council[2] of Atlanta, Georgia, released an analysis on hunger which showed that malnutrition continues to be a serious problem in the South. The analysis was based on a 1968 "Ten State Nutrition Survey." The survey was described as the most authoritative description available of the range and depth pf the problem of malnutrition in the United States. The Southern Regional Council emphasized the need to begin building support for a national nutrition policy.

Historical evidence indicates that man has not found

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[1]Henry Kissinger, World Food Conference (November, 1974).

[2]Southern Regional Council, "Ten State Nutrition Survey" Department of Health, Education and Welfare, Atlanta, Georgia, 1972.

ways to cope effectively and efficiently with his food problems. Research by White[1] and Hampton[2] points to numerous factors that cause this problem. The most discussed among these factors has been the influence of financial limitations. Another factor has been that of making the knowledge derived from nutritional research useful to people. In addition, dietary surveys have given abundant evidence that the diets of many adolescents are nutritionally poor and that adolescents need instruction in nutrition.

There are data from the Food and Nutrition Board of the National Academy of Sciences[3] demonstrating that severe general malnutrition during early postnatal life will affect human brain structure and disrupt normal chemical development. Some children suffer, even before birth, from poor nutrition. Later in childhood, a lack of sufficient protein may cause irreversible brain damage. It has been shown that intakes of iron, calcium, vitamin A, and ascorbic acid are usually inadequate in the diets of poor people. These nutrients as well as kilocalories and protein are critical needs during pregnancy, and from infancy throughout life. The intellectual development of children was often

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[1]Hilda S. White, "Iron Nutrients of Girls and Women," Journal of American Dietetics A 53 (December 1968), 563-70.

[2]Mary C. Hampton, "Calories and Nutrient Intakes of Teenagers," Journal of American Dietetics A 50 (May 1967): 385.

[3]A Position Paper of the Food and Nutrition Board, National Academy of Sciences, National Research Council, 1974.

constrained by inadequate nutrition. McGovern,[1] in discussing the need for nutrition education legislation, stated that the problem of ignorance about nutritional matters is certainly not confined to the poor, nor is it limited to laymen, since many in the medical and allied health professions have had the exposure to nutritional problems. An expanded program in nutrition has to start with children.

According to White:[2]

> Before a solution to the problem of malnutrition, dieting, and food faddism can be considered an understanding of people's actions must be gained. Only when educators are willing to work within a group's value system will the information be meaningful and useful.

Clausi[3] believed that one of the biggest challenges in improving diet quality is that of consumer education about nutrition. Bauman[4] wrote that consumers lack knowledge about the composition of nutritionally balanced diets and food sources of essential nutrients.

Families with low income seem disturbed by the growing burdens of taxes, by their inability to cope with the rising cost of living, by loss of jobs, and by the feeling that they cannot control their own destiny. All of these, to a greater

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[1]George McGovern, Chairman, Senate Select Committee on Nutrition and Human Needs, Nutrition Today," Journal of Home Economics (January 1974): 24.

[2]P. L. White, "New Thoughts for Dietary Practices," School Food Service Journal (October 1973): 27:50-54.

[3]A. S. Clausi, Food Technology 27 (June 1973): 36-40.

[4]H. E. Bauman, "What Does the Consumer Know About Nutrition?" Journal of American Medical Association 225 (July 1973): 61-62.

or lesser degree, impinge upon the family concurrently. It is evident that there is a difference in income between rich and poor, and also that incomes rise slowly for the poor. As a nation's per capita income increases, so does the cost of living. So the poor get poorer.

According to Zawacki,[1] there is national and international concern for the rate of population growth. It appears that neither earth nor man can stand many more doublings of the human population. Population growth may create pressures on agriculture and difficulty in finding jobs where unemployment is already serious. Most countries have not developed ways to provide sufficient food and income for good quality of life for all of their people. The concept that a family can have all the children for which it can provide may be crucial in some part of the world. The size of a family, particularly in the low income group, may affect its ability to purchase an adequate diet. It is believed by some individuals that poor people could have a better quality of life if they limited their family size through the practice of family planning and birth control. Family planning appears to be one way of helping individual families to have a better life and also a way of helping the country attain its national goals. The Population Reference Bureau[2] said that determining the size of one's

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[1]April Zawaki, A Textbook for Family Planning Field Workers (Chicago: University of Chicago, 1971), p. 9.

[2]Population Reference Bureau, Inc., pp. 17-18.

family had, in most cultures, been a matter of parental concern and a decision beyond the active control of the larger society or the intervention of government. Wybourn[1] said that planning is a human right, the right to make common sense of our lives, the right of every child to be wanted, and the right of mothers and fathers to have the children for whom they are able to nourish and support.

The 1965 and 1970 National Fertility Studies showed that while all socio-economic groups experience unwanted pregnancies, they occur most often and have the most serious consequences among low income couples. Some writers point out that the problems of the poor are least understood by society and more information is needed about the way in which the poor live.

Statement of the Problem

This study dealt with the relationship between the level of nutritional consumption, the education, income, and family size of selected poor families in southwest Atlanta, Georgia. These elements were inherent in the problems of rapid population growth as it affected the quantitative and qualitative food intake. The families were divided, by income levels, into three strata with an equal number of families in each stratum.

They were designated as stratum 1, stratum 2, and

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[1]Marjorie Wybourn, Director International Project in Family Planning, "Family Planning Conference" (Washington, D.C.: Home Economics Association, 1971).

stratum 3. Stratum 1 was the lowest income level and stratum 3 was the highest income level. Relationships were determined among all strata of families on the level of nutritional consumption, income, and family size. Differences were determined between the upper and lower strata families on the bases of their knowledge of nutrition, income, and family size.

Hypothesis

With respect to the lowest and highest strata, in the area of knowledge of nutrition, knowledge of income, and knowledge of family size, the following was hypothesized:

The difference between the mean of the two strata, upper and lower, $U_1 - U_2$, equaled zero against the alternative hypothesis that it is different from zero.

$H_o : U_1 - U_2 = 0$

$H_1 : U_1 - U_2 \neq 0$

The objectives of the study were to determine the differences in:

a. knowledge of nutrition in the upper and lower strata

b. knowledge of income in the upper and lower strata

c. knowledge of family size in the upper and lower strata

d. shopping practices of families in the samples

e. average amount of money spent for food weekly in each of the three strata and in all strata

f. mean educational level of each stratum and all strata

g. nutritional consumption and knowledge of nutrition, income, and family size in each stratum and in all strata

h. mean yearly income and the mean weekly expenditures for food of all the three samples in comparison with the National Norm mean.

Definition of Terms as Used in This Study

Diet--refers to food supplied over a consecutive period of time.

Family--means a parent(s) with two or more dependent children, living within the same house, and on an annual combined income.

Family size--refers to the total number of members living as a unit in the same house.

Income--is the net amount of money the family has to spend per year.

Knowledge of family size--means the family's having the necessary information to equate family size with family income and nutritional needs.

Knowledge of income--refers to the family's having the necessary information to plan and spend the food dollar to meet the dietary needs.

Diet cost--means the smallest amount of money which will purchase adequate food to meet nutritional requirements recommended in this study.

Nutritional knowledge--is the information needed to select a minimally adequate diet based on family composition.

Poor family--means a family of four with an annual income between $4,800 and $5,700, which is $100 to $1,000

per year above the standard poverty level.

Poverty level--is the Office of Economic Opportunity's standard level of $4,700 per year for a family of four.

Recommended dietary allowances--refers to the public health recommendation designated as guides for safeguarding the health of the entire population in the United States.

Week--is six consecutive days.

Basic four food group--is a tool for measuring the quality of a diet.

Limitations

The precise limitations of this research included the setting, the population sample, the hypothesis and objectives, the instruments and the criteria. The geographical setting was the southwest section of the city of Atlanta, Georgia. The population sample consisted of selected poor families with specific annual incomes as they were during September of 1974. The relationships between the factors stated in the hypothesis and the objectives were measured by the instruments and criteria developed by the researcher. It was necessary for her to develop her own instruments mainly because there were no tested available instruments which she could employ.

The Significance of the Study

An urbanized community in the city of Atlanta, Georgia was selected as the site for this study for a number of reasons, the first being that Atlanta has been identified by

Income Census Tracts as a city having a large percentage of problems related to poverty. In addition, the vast number of educational institutions located within the specific target area in this study need to seek ways in which their resources may be applied to alleviate some of the problems of the urban poor. Dale Clark[1] said that a newspaper reporter commented that despite what some county officials and congressmen might say, there are people in Georgia who work hard for a living but who often go to bed hungry and have to live under little better conditions than those prevailing in pig sties. Jeffers[2] said that, in addition to a limited recognition of the widespread diversity that exists among the poor, there also is little awareness of what we describe as the straddling behavior of the poor. We find that many poor straddle poverty and affluence. A great deal of their behavior straddles goals associated with poverty and deprivation on the one hand, and the behavior and goals associated with higher socio-economic status on the other hand. Atlanta is called the Jewel City of the South, a city on the move, proud of its past and confident of its future. Right in the midst of this pride and progress, however, thousands of people live below substantial conditions in both their home and community environments.

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[1]Dale Clark, A Project Five Reporters on the City of Atlanta. The Shame of Atlanta, produced by Channel 5, Department of News and Public Affairs (November 1963).

[2]Camille Jeffers, "Hunger Hustling and Homemaking," Journal of Home Economics 61, No. 10 (December 1969): 755.

The poor of Georgia have an unusual number of health problems. Castor[1] stated that some 100 to 1500 persons die of hunger and severe malnutrition in Georgia each year and the incidence of mental retardation in Georgia is twice the national average. Georgia Vital and Morbility Statistics[2] showed that in Georgia there is a high incidence of low birth-weight babies, neonatal deaths, maternal deaths, and maternal anemia among the more affluent. All of these problems deal quite specifically with the infant and his mother. In addition, among the poor in Georgia, high blood pressure, coronary heart disease, stroke, and diabetes are highly prevalent among older people. It may be assumed that all of these effects are significantly correlated with malnutrition and some may be related to a lack of adequate amounts of protein in the diet.

It is hoped that this study will stimulate and encourage educators, at all levels of instruction, to incorporate into their programs and/or school curricula nutrition and family planning information. Further, it is hoped that family planning and nutrition concepts will be integrated into the content of all subject areas in schools at all educational levels. Presently, this information is taught in isolation, as separate units of knowledge.

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[1] W. O. Castor, Hunger and Malnutrition in Georgia, 1969, Report Number 1, Inter-Institutional Committee on Nutrition for Georgia, pp. 1-51.

[2] Georgia Vital and Morbidity Statistics, 1967.

It is hoped that this research will contribute data which may be used as base lines for the accumulation of comparable data in other, but similar, communities. It was intended that the data collected through this study would be analyzed, summarized, and used to draw inferences for the improvement of the teaching of nutrition at all levels of education. If such improvement is made, family life in Atlanta and America may be strengthened.

The first steps in the development of this research problem were drawing up the hypothesis, defining the terms, and establishing the significance of the study. Other steps in its development are described in the following chapters: Chapter II, Review of Related Literature; Chapter III, Criteria; Chapter IV, Methodology; Chapter V, Analysis and Discussion of Findings; and Chapter VI, Summary, Conclusions, and Recommendations.

CHAPTER II

REVIEW OF RELATED LITERATURE

The review of related literature which focused upon family nutrition in the United States revealed that very few studies have been directed toward a particular population such as those included in this study. This chapter presents research findings which may have significance for the development of more effective nutrition programs. The literature presented is divided into the areas of nutrition and dietary practices, food expenditures, and family size information.

Nutrition and Dietary Practices

Knowledge alone frequently seems ineffective as a force causing behavior changes. This may be intricately interwoven with various cultural and social patterns of behavior in regard to food and health. A few studies have been aimed at identifying areas of misinformation about food and health. Cornely, Bigman, and Watts[1] studied nutritional beliefs among a low income urban population. They found that both white and Negro families had

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[1]Paul B. Cornely, Stanley K. Bigman, and Dorothy B. Watts, "Nutrition Beliefs Among a Low-Income Urban Population, Journal of American Dietetics Association 42 (February 1963): 131.

insufficient information about the essentials of an adequate diet. They also discovered that families were deficient in knowledge about the four basic food groups stressed in teaching. In 1965, Jalson[1] investigated nutritional beliefs and practices. He found that subjects who composed the 'faddist' sub-sample had less nutrition than did the non-faddists and were concentrated in the older age and lower income groups.

Successful modification of behavior relevant to nutrition certainly requires a thorough understanding of the group involved. Effective nutrition education is dependent on the use of knowledge, the principles of learning, and factors involved in the adoption of new ideas.

Dicks[2] conducted a study in 1966 on the relationship of food habits of junior high school students to depth of understanding of concepts in food and nutrition. She found that adolescents need to know more about food and nutrition concepts; academic ability may not always influence a person's food habits; and, adolescents need to be more aware of the importance of adequate food and regular meals.

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[1] S. B. Jalson, M. M. Burns, and J. M. Rivers, "Nutritional Beliefs and Practices," Journal of American Dietetics Association 47 (1965): 263-68.

[2] Marion C. Dicks, "The Relationship of Food Habits of Junior High School Students to Depth of Understanding of Concepts in Foods and Nutrition" (Masters Thesis, North Carolina College at Durham, 1966), pp. 15-16.

Likewise, Hinton,[1] in 1963 investigated food habits of 140 adolescent girls aged 12-14 years. Knowledge of nutrition in this study was measured by a test of ability to apply nutritional principles in the selection of an adequate diet. Knowledge was found to be positively related to good dietary practices.

In addition to the above studies, Morse, Clayton, and Cosgrove[2] in 1967 made a nutritional status study of 422 volunteer children from the seventh, eighth, and ninth grades of Burlington Public and Parochial schools. They also tested a group of mothers for their nutrition knowledge in relation to education, occupation, and nutritional status of their children. They found that there is a need for supervised education in nutrition. They felt that even an elementary course would have helped these mothers. Courses in nutrition and familiarity with foods and their nutrients were recommended for the elementary grades. These studies related to one of the objectives of this research and may point out a relationship between knowledge of nutrition and its application in dietary planning.

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[1]M. A. Hinton, E. S., Eppright, H. Chadderton, and L. Wolins, "Eating Behavior and Dietary Intake of Girls 12-14 Years Old," Journal of American Dietetics Association 49 (1963): 223-27.

[2]Ellen H. Morse, Mary M. Clayton, and Lola deG. Cosgrove, "Mothers' Nutrition Knowledge," Journal of Home Economics 59, No. 8 (October 1967): 667-68.

Pope[1] investigated the nutritional knowledge and the sources of nutritional information of a selected group of Montgomery County, Maryland homemakers through the use of a multiple choice questionnaire. Four designated areas in Montgomery County, Maryland participated in the study: Rockville, Bethesda, Silver Springs, and Kensington-Wheaton. One hundred homemakers agreed to participate and twenty-five were selected in each of the four areas. It was found that homemakers listed their nutritional education in school as their main source of information. Eighty-two percent of the homemakers rated outstanding in diet selection. The researcher pointed out that there is a need for nutrition education.

In 1967, Waye[2] made a study on an assessment of nutritional knowledge and practices among a selected sample of low income homemakers in Ithaca, New York. The purpose was to determine what homemakers in the low income population know about nutrition; to evaluate the relationship between knowledge and the homemakers' actual practices in feeding the family; and to investigate the sources of her knowledge in nutrition, food preparation, and meal planning. The researcher concluded the formal education showed

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[1]Jean Marie Pope, "A Study of the Nutritional Knowledge and the Source of Nutritional Information of Selected Group of Montgomery County, Maryland Homemakers" (Masters thesis, University of Maryland, 1967), pp. 9-11.

[2]Bonny Lauretta Waye, "An Assessment of Nutritional Knowledge and Practices Among a Selected Sample of Low-Income Homemakers in Ithaca, New York" (Masters thesis, Cornell University, Ithaca, New York, 1967), pp. 24, 69-81.

little relationship to the homemakers' practices. These studies parallel the present study in that they linked knowledge of nutrition and its application to dietary practices.

Food Expenditures

Williams[1] conducted a study of food buying practices of low-income families in Americus, Georgia. She found that approximately 75 percent of the shoppers in her study used a shopping list and had a predetermined amount of money to spend. Further study in buying practices include a study made by Coale[2] who investigated the extent of inclusion of the basic food groups in the diets of homemakers. One hundred and twenty-eight mothers of pre-school children located in a low income, Negro, urban community were interviewed. Half of the mothers had been taught nutrition. Food buying and cost was considered the most difficult aspects of family feeding.

Schwartz and Dalrymple[3] studied high school nutrition education to determine if high school home economics

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[1]Shirley Walker Williams, "Food Buying Practices of Selected Low- and Middle-Income Families in Americus, Georgia" (Masters thesis, University of Alabama, 1972).

[2]Margaret Sue Coale, "Factors Influencing the Food Habits of Negro Preschool Children in the Inner City" (Masters thesis, Cornell University, 1972).

[3]Nancy E. Schwartz, Julia I. Dalrymple and Virginia Vivian, "High School Nutrition Education: How Effective is It?" Journal of Home Economics (May 1974): 16-17.

graduates apply nutrition knowledge when they buy food. They found that high school graduates did not apply their nutrition knowledge when buying food. The studies indicate that there is a deplorable gap between what is taught in nutrition and what is put into practice.

Family Size

The concluding section of this review of related literature indicated that health status for children born to very young and very old mothers is poor and that infants and childhood mortality is greater among lower social classes than among higher social classes.

Dingle[1] made a longitudinal study of Cleveland families. She found that there was an increasing incidence of common respiratory diseases, infections, and gastroenteritis with increasing family size.

Campbell,[2] in writing about the role of family planning in the reduction of poverty, stated that one of the major burdens of the poor is the large number of children dependent on them. The prevention of unwanted births would have a substantial economic impact on families living in poverty. It is significant that poverty was found in 11 percent of families with two children and 48 percent of

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[1] John H. Dingle, George F. Badger, and William S. Jordan, Illness in the Home: A Study of 25,000 Illnesses in a Group of Cleveland Families (Cleveland: Western University Press, 1964), pp. 39, 193, 338.

[2] Arthur A. Campbell, "The Role of Family Planning in the Reduction of Poverty," Journal of Marriage and the Family 30, No. 2 (May 1968): 236-245.

those with more than five children. This means that nearly half of the children in the United States were growing up in poverty. Poverty statistics indicated that about 450,000 families with four or more children, living in poverty, would not be at the poverty level if demands for their support were limited to three children.

Summary

Many studies have been conducted concerning nutritional programs. Although several investigations have been made, the majority of them involved nutritional knowledge and sources of nutritional information. It was the purpose of this study to examine the relationship between the level of nutritional consumption and the education, income, and family size of selected families living in the southwest section of Atlanta, Georgia.

In recent years educators in the nation have endeavored to make available nutritional information to more people whose level of income is likely to be inadequate for good nutrition. Among these families were some who were malnourished primarily because of economic reasons. The acceptance of the high-risk individuals in society carries with it the responsibility of making every effort to insure the protection of their health. The response of the educators to their accountability for the success of their people has often been the offering of special programs as one approach to reducing malnutrition and increasing the

ability of people to cope with economic stress.

There appeared to be agreement among researchers and authorities in the field of nutrition that a well designed and implemented nutrition program is needed. The studies which were surveyed indicated that such a program of instruction in nutrition, money management, and family planning could result in significant gains in the dietary behavior of families who have economic problems. Although there was a wealth of educational materials designed for the improvement of nutritional practices among families, very little has been designed to meet the needs of predominantly poor families. This researcher was interested in the contribution of such a study to the improvement of the quality of living of the poor families through a new perspective in education.

CHAPTER III

CRITERIA

This research had four factors which are: a poverty level, sampling frame, minimal nutrition requirements for a family of four, and a low-cost diet for a family of four. Before this investigation could proceed, criteria had to be developed.

Poverty Level

The official Office of Economic Opportunity (O.E.O.) poverty index was used to distinguish between poverty stricken people and poor people in this study. The poverty level index, while not an ideal tool, is a superior measure to income alone because it approximates per capita income. Also, it gives the income below which lack of income deters an individual or family from securing needed assistance in food and family planning care.

Agencies in Atlanta, Georgia use different poverty levels of income for eligible families. All of the agencies use as a guide the standard poverty level of O.E.O. That level was $4,700 annual income for a family of four in September of 1974. In view of this fact, this research used O.E.O. poverty level to determine the income level of

families eligible for this study. The criterion is an annual income range of $4,800 to $5,700 per family of four or $100 to $1,000 per family above the poverty level income of O.E.O. Atlanta. These families were seldom studied.

This criterion appears to be a satisfactory division between poverty level income and moderate level income of families in Atlanta, Georgia. It must be remembered that the purpose of this research was to study poor families with income above the poverty level and yet below the moderate income level. The moderate income level is above $5,700 per family of four per year.

Sampling Frame

According to the Atlanta Chamber of Commerce,[1] September of 1974, the official Atlanta Standard Metropolitan Statistical area expanded from five to fifteen counties. Data from the five central counties indicated:

1. Population of 1,522,800 (1973)
2. Number households 429,369 (1972)
3. Median family income of $10,695 (1973)
4. Effective buying power per household of $13,440 (1972)

Metropolitan Atlanta is divided into census tracts, small geographical areas into which cities and counties have been divided for statistical purposes; designed to

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[1] U. S. Department of Commerce Census Reports, Georgia, Atlanta Chamber of Commerce (January 1973).

be relatively uniform with respect to population characteristics, economic status and living conditions. The average tract in Atlanta has about 4000 residents.[1]

The City of Atlanta is a section within metropolitan Atlanta located partly in Fulton County and partly in DeKalb.

Data from the 1973 census:

1. Population of 479,900
2. Households 162,291 (1970)
3. Female household heads of 25,665
4. Median family income of $8,399 (1972)
5. Density per square mile of 1,146.4
6. Non-farm families percent of 99.6.

The southwest section of Atlanta was the community selected for this study. This section was selected because it had

1. a large percentage of families with incomes under $3000 per year and a large percentage with incomes just above the poverty level income.

2. a high concentration of poverty and poor people.

According to the document Atlanta: Income by Census Tracts[2] there are in southwest Atlanta:

1. 1400 families and unrelated individuals with incomes between $4,000 and $4,999 (1973)

2. 1406 families and unrelated individuals with incomes between $5,000 and $5,999 (1973, and

3. a population of 13,757 (1973).

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[1] Atlanta: Income by Census Tracts, Atlanta Chamber of Commerce (January 1973).

[2] Ibid.

The sample for this study was drawn from families living in the southwest sector of the City of Atlanta, Fulton County. The 1973 census tract data for standard metropolitan statistical areas of Atlanta were used to select twenty-three contiguous census tracts as the base population from which the study sample was derived. These particular census tracts were chosen because they contained a high proportion of poor families.

The Atlanta Regional Commission[1] showed that within the twenty-three census tracts there were families who met the criteria for this study. However, it was difficult to determine the exact number in this population who met the criteria in terms of family income and family size estasblished for this study. There were 2806 families and unrelated individuals living within the twenty-three tracts selected. A total of 508 families were estimated as potentials from which to select a final sample. The map in Appendix D shows the selected site. Within this area there are seven institutions of higher education (four undergraduate colleges, and one interdenominational professional school, one graduate school, and one technological school).

Nutritional Requirements

Minimum nutritional requirements for a family of four

[1] Population and Housing, prepared by the Atlanta Regional Commission, Atlanta, Georgia, 1973.

members were established by using the Recommended Dietary Allowances (RDA) figures per person of the National Research Council. The recommended dietary allowances are set nutrient levels that will assure good nutrition for practically all individuals in the population and allow a margin of safety. The recommendations are made for people in the United States. Since the allowances aim to meet the needs of most persons, they are higher than the amounts needed by some individuals.

RDA has a safety factor of one-third more nutrients than required for an adequate diet for individuals in the United States except for the requirement of kilocalories. Kilocalories, unlike the other nutrients of RDA, are established at the lowest level for adequate nutrition. In dietary planning the recommended allowances of riboflavin, thiamin, and niacin are made on the basis of the intake of kilocalories. That is, per 1000 kcal the needs are 0.6 mg for riboflavin, 0.5 mg for thiamin, and 6.6 mgs for niacin. The dietary recommendations developed for this study represented two-thirds of the nutritional requirements in each category of RDA except for kilocalories, shown in Chart 1, Appendix D. The reason for the difference in recommendations was that RDA allowances are for optimum adequate nutrients and the present study was concerned with minimum adequate nutrients.

The diet for this research was also based on the Basic

Four Food[1] groups which were established by the United States Department of Agriculture. The four separate groups are: 1) meat, fish, poultry, and alternates, 2) milk and milk products, 3) fruits and vegetables, and 4) breads and cereals. Each food group makes a specific contribution of nutrients that can be traded back and forth within each group and in some cases from group to group. For example, milk is used in the milk group for calcium or it may be used in the meat group for protein. The foods from all groups work together to supply the nutrients necessary for health, maintenance and growth.

The two dietary standards described above were used to evaluate the nutrient quality of the family diet, to allow for seasonal differences in food supplies, to estimate the necessary nutrient intake, and to serve as tools to interpret food consumption practices of the families in this research.

Lowest Cost Diet

The next step in the development of criteria was to determine the amount of food required to supply the necessary nutrients and their cost. Using the basic four food groups as the standard, the four groups were broken to form eleven groups, Appendix D, Chart 2. This grouping

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[1] United States Department of Agriculture, Consumer Marketing Service Basic Food Four Group. Agricultural Research Service (July 1966).

brought together foods that were enough alike to compare in prices. The food equivalents were determined by those listed in Chaney and Ross'[1] table of food composition.

It was assumed that the families were to purchase food from the markets within their communities. The cost of food was based on a buying guide which assured the level of nutrients required in the diet plan. The following information was used to arrive at the diet cost:

1. United States Department of Agriculture[2] June, 1974, showed the food cost for a family of four with school children to be $30,10 per week, or $152.90 per month in the Economy Food Plan.
2. United States Bureau of Labor Statistics,[3] 1969 gave an annual income of $5,700 as adequate for a family of four at the lower level standards.
3. United States Department of Agriculture[4] listed $8.50 per individual as the average cost per week for food for the average person in the civilian population of the United States in 1974.

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[1]Margaret Chaney and Margaret Ross, Nutrition (New York: Houghton Mifflin Company, 1971), p. 412, Tables 17-1.

[2]United States Department of Agriculture, Agriculture Research Service, Consumer Service and Economic Institute, "Cost of Food at Home Estimated for the Economy Food Plan," (June 1974).

[3]United States Department of Labor, Bureau of Labor Statistics, "Three Standards of Living for an Urban Family of Four, Bulletin No. 1570-5 (1969).

[4]United States Department of Agriculture, op. cit.

4. Mean food prices taken in two different months in the retail food markets within the communities used in this study, September and October of 1974 were used in this research.
5. Findings from a designed mock-shopping test performed by four Atlanta trained food shoppers using four different amounts of money and the same shopping food list were used in this research.

Information from these sources were used to establish a cost of $28.00 per week for a family of four as adequate to purchase a minimum adequate diet for the families in this study. This is $7.00 per individual per week. The amount of food and the dollars allowed for each food group are shown in Chart 3 below.

CHART 3

AMOUNT OF FOOD TO PURCHASE AND IT'S COST PER FOOD GROUP, FOR A FAMILY OF FOUR

food Group	Amount to Purchase	Food Cost
Meat, Fish, Poultry and Alternates	7 lbs	$ 6.30
Vegetables and Fruits	20 lbs	7.20
Breads and Cereals	8 lbs	5.18
Dairy Products	14 qts(milk)	4.90
Fats and Oils and Bacon	2 lbs	1.85
Sugars and Sweets	2 lbs	1.25
Dried Beans and Peas	1 lb	0.60
White Potatoes	6 lbs	0.72
Total Food Cost Per Week for Four		$28.00
Total Cost Per Individual		7.00

In summary, families from twenty-three contiguous census tracts in Atlanta, Georgia were the samples for this study. The poverty level was set at $4,700 for a family of four. The income levels were determined by the relationship of income to family size. A set of income standards were calculated for each stratum of families. This set of calculations assumed a minimum income of $4,800 for families in stratum 1, $5,100 for stratum 2, and $5,400 for stratum 3. These strata were between poverty and moderate income.

The average weekly food expenditure was established at $28.00 for a family of four. The average weekly expenditure per capita was $7.00. This was considered to be adequate for the lowest cost diet that would provide nutrients equal to the calculated standards ser for this study.

The diet cost was comparable to the Economy Food Plan for a family of four by Kinder[1] with her costs updated to food prices in September of 1974..

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[1] Faye Kinder, Meal Management (New York: Macmillan Company, 1968), p. 270.

CHAPTER IV

METHODOLOGY

This chapter dealt with the procedures used in this study to investigate the relationship between the level of nutritional consumption and the education, income, and family size of selected families who live in the southwest section of Atlanta, Georgia.

The descriptive survey method of research employing the usage of a survey questionnaire, an interview questionnaire, a food checklist, and statistical analysis were used to gather and analyze data for this study. Data collection took place over a three-week period during the months of September and October of 1974. Steps taken to initiate this study were as follows:

Selection of the Sample

A survey questionnaire was developed for the purpose of making contacts with families to enlist their cooperation in this study and to locate an initial population from which the sample population could be drawn. The survey consisted of five items. They were: 1) name of the individual, 2) address, 3) number of children in the family, 4) telephone number, and 5) willingness to participate in the study.

Surveys were conducted in the homes of families, in

food markets, churches, and schools. The contacts were made by personal interviews and telephone. Many names and addresses of families were obtained from school records. The research study was explained to an adult family member, and appointments for data gathering interviews were scheduled.

Five hundred and eight families were reached in the initial survey. Of the five hundred and eight families, approximately 301 were eligible for the study. A family was considered eligible if it consisted of four or more members living in the same house on a combined annual income between $4,800 and $5,700. The income and family size of the majority of the eligible families were predetermined. The 301 families were stratified by income into three groups: families with an annual income between $4,800 - 5,099 as stratum 1, those with income between $5,100 - 5,399 as stratum 2, and those having an income of $5,400 - 5,700 as stratum 3.

The stratified sampling technique was used because of its greater precision. After the families were divided into three strata by income, a random sample was selected by pulling twenty-eight families from each of the three strata. The sub-populations were combined to form a total sample of eighty-four families.

The Instruments

Development of the Instruments

Two instruments were developed and used to collect the data necessary for this study. They were an interview and a food checklist. Content validity of the interview was established through a review of literature and selected professional personnel. Each instrument developed was validated through a pilot study involving eight families from the population area used in this research. The questions and statements were read to a family member; if they were not clear, they were revised.

To obtain more reliable data, the interview method was selected because it could be adapted to the level of understanding of the interviewees participating in this investigation. An interview questionnaire consisting of fifty-eight items with thirteen open-ended questions and forty-five Likert-type questions and statements was developed. The open-ended statements and questions allowed the respondent to volunteer his answers and the Likert-type statements and questions allowed the respondent to indicate the degree to which he agreed or disagreed with each statement or question on a scale permitting a five-degree range.

The interview covered background information, nutrition information, and family size information. Background information was structured to obtain data on family size, number of children, food expenditures, awareness of nutritional needs, last grade the interviewees reached in

school, and what the family thinks it needs other than money, for a better quality of life. Nutritional knowledge included information relating to family dietary practices. Knowledge of income included information on foods and shopping practices.

The second instrument developed was an eighty-four item food checklist. Adelson's[1] concepts on collecting dietary data were used as a guide in the construction of this instrument. The purpose of the checklist was to secure information on the family's dietary habits in the home. The checklist was developed from the basic food groups. The four groups were further divided into eight groups including 1) meat, fish, poultry, 2) yellow vegetables, 3) dark green vegetables, 4) other vegetables, 5) citrus fruits and juices, 6) eggs, 7) dairy products, and 8) breads and cereals. The selected foods on the checklist were available in the local markets in the community studied. The checklist was constructed to include the family's dietary intake for three consecutive days including one weekend day.

Reliability of the Instruments

One major analysis was made to determine the reliability of the measuring instrument, the interview. Three

[1] S. F. Adelson, "Some Problems in Collecting Dietary Data from Individuals," Journal of American Dietetics Association No. 30 (1960): 453.

weeks after the initial interviews were conducted, a reliability check was made with eighteen randomly selected interviewees who participated in the first interviews. Interviewers were assigned to conduct the second interview. This procedure provided a check of interviewer reliability. As determined by the test-retest method, correlations between repeated measures revealed a score of .96. This test showed that the instrument had a high degree of reliability.

The food checklist was designed from the basic food groups. Literature showed that the checklist was a reliable tool for collecting dietary data. The record revealed essential information concerning the family diet, providing the best context within which nutrition knowledge, income, and dietary behavior could be interrelated and analyzed in regard to the impact of one factor upon the other.

The basic four food groups are used as a visual tool for teaching nutrition by groups such as teachers, extension agents, 4-H classes and specialists in television programming and production. They permit one to obtain a qualitative evaluation of a diet but do not provide quantitative information.

The recommended dietary allowances are used extensively as a guide in planning and evaluating diets in the United States. They constitute a valuable index to what is

currently known about essential nutrients. Also, they are used as a guide for planning and obtaining food supplies for population groups, for establishing standards for public assistance programs, and for interpreting food consumption data in relation to the assessment of nutritional status.

Collection of Data

A workshop was conducted to train the interviewers. Compton and Hall's[1] tested procedures for training interviewers was used as a source of information in the workshop. The time allowed for each interview was twenty to thirty minutes. The interviews were conducted between September and October 31, 1974. Ten interviewers were undergraduate female students between the ages of 19 and 21 years. The other interviewers were two public health nurses, and two home economics teachers, and the researcher.

Interviews were conducted with selected families in their homes during their free time. The interviewers worked in pairs. One interviewer read the questions and statements to a family member, and the other interviewer recorded the information given by the family member on an interview sheet designed for this research. All questions and statements on the interview sheet were answered. At

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[1]Norma Compton and Olive Hall, Foundations of Home Economics Research, A Human Ecology Approach (Minneapolis: Burgess Publishing Company, 1972), pp. 243-50.

the end of the interview a food checklist was left with the interviewees and its purpose and mechanics were explained to the respondent. The family member was asked to keep a consecutive three-day record of the food prepared and served his family by checking on the checklist, in the appropriate column, the food served. The respondent was asked to complete the diet record and return it at the end of the third day in a stamped self-addressed envelope.

Two weeks after the return of the three-day record follow-up interviews were conducted with twenty of the interviewees using the 24-hour recall technique of collecting data on dietary practices. The 24-hour recall technique involved a series of questions pertaining to the foods a family consumed the previous day. It was considered satisfactory for determining food patterns and dietary intake. It was used in this study to make the three-day dietary data more reliable.

Four tools were used to analyze and evaluate the data on dietary practices of the families in this study. They were the Recommended Dietary Allowances, the Basic Four Food Groups, the national norm mean, and the recommended food expenditures per family per week designed for this study.

Analysis of Data

In order to analyze statistically the data on knowledge of nutrition, income, and family size, it was

necessary to devise a scoring system for the statements and questions on the interview. The knowledge information was converted to scores. The degree of "strongly agree" and "agree" were converted to true statements; neutral statements were converted to zero, and "strongly disagree" and "disagree" statements were converted to false statements.

The analysis of the data collected for this research employed the following statistical measures:

Hypothesis

The t-test was used to test the hypothesis. The test determined the critical region for rejection or acceptance of the hypothesis at the .05 level of confidence between the upper and lower strata families. The hypothesis tested was that the difference between the means of two strata, upper and lower, $U_1 - U_2$, equaled zero against the alternative hypothesis that it was different from zero in the following:

Knowledge of Nutrition
Knowledge of Income
Knowledge of Family Size

H_o was tested against H_1 by means of the following statistics:

$H_o : U_1 - U_2 = 0.$

$H_1 : U_1 - U_2 \neq 0$

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{(N_1 - 1)\, S_1^2 + (N_2 - 1)\, \bar{S}_2}{N_1 + N_2 - 2} \left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}$$

Where $\bar{X}_1$ and $\bar{X}_2$ were the means of the sample from strata 1 and 3 respectively, and $\bar{S}_1$ and $\bar{S}_2$ were the unbiased estimates from samples 1 and 3, the common population variance and n_1 and n_2 were the sizes of the sample 1 and 3.

Objectives

The objectives of this study analyzed through the use of the Pearson Product-Moment Coefficient of Correlation were as follows:

The relationship between knowledge of nutrition in the upper and lower strata

The relationship between knowledge of income in the upper and lower strata

The relationship between knowledge of family size in the upper and lower strata.

The objectives that were categorized, summarized, and evaluated were as follows:

1. Shopping practices of the families in the sample
2. The average amount of money the family spends for food weekly in each stratum and in all strata
3. The dietary practices in all strata
4. The mean educational level of each stratum and in all strata
5. Dietary intakes of the families in each stratum and in all strata
6. The mean yearly income of the three samples and the weekly expenditures for food per week with the national norms mean and the criterion measures for the study
7. Nutritional consumption and knowledge of nutrition, income, and family size compared.

Summary

The specific purpose of this study was to examine the relationship between the level of nutritional consumption

and the education, income, and family size of a selected sample of poor families in Atlanta, Georgia. In order to accomplish this purpose, interviews and food checklists data were analyzed, interpreted, and utilized in identifying the nutritional problems and needs of selected families in the study population.

Data for the study were collected from families in the southwest section of Atlanta, Georgia. The subjects of this study were families who had incomes of $100 to $1000 above the poverty level of $4,700 per year for a family of four, in September of 1974. Eighty-four families were used in the study sample. The data were statistically analyzed and used for the purposes of this research.

CHAPTER V

ANALYSIS AND DISCUSSION OF FINDINGS

This chapter presents an analysis of the data and a discussion of the findings. The analysis and discussion were concerned with the characteristics of the sample, and the results of the findings from the interviews and checklists.

The empirical evidence presented in this analysis was based on interviews of eighty-four families and a food checklist from eighty-two families living in Atlanta, Georgia. The present study used as its population for inquiry families from a low income section of a university community. The sample was selected by using the proportional stratified simple random technique from a population which consists of approximately 508 families.

The families were divided into three strata by income levels. They were referred to in this study as stratum 1, stratum 2, and stratum 3. The findings from this research follows.

Characteristics of the Sample

Eighty-four wage earning families were selected from a population of mixed ethnic groups living in the southwest section of the City of Atlanta, Georgia. The families were

considered as poor, having annual incomes between $4,800 and $5,700 to support four or more members. These families ranged in size from four to eight persons.

During the interview, the interviewers discerned that the families exhibited an interest and concern about the purposes of this study. When they were asked about their educational attainment, many of the respondents indicated a desire to return to school. None of the families refused to be interviewed and none of them refused to keep the three-day food checklist. However, only eighty-two families, 97 percent, returned the food checklist.

Interview Data

General Information

Data in Table 1, page 44, and Figure 1, page 45, indicated that there were eighty-four families in this study, twenty-eight in each of the three strata. The average family size was five members. An analysis of the data revealed that the mean grade reached in school was 10.93. Only six interviewees obtained less than a high school education, thirty-two attended high school, thirty-four completed high school, and twelve attended college from one to two years. The importance of the family educational level has been noted repeatedly in consumer behavior. However, in this study, related characteristics were more important than years of schooling. Data in this study show

TABLE 1.

LEVELS OF EDUCATION BY INCOME

	Three Strata of Families							
Grade	Income $4,800-5,099	Percent-age	Income $5,100-5,399	Percent-age	Income $5,400-5,700	Percent-age	Total	Percent-age
6th	0	0	1	4	1	4	2	2
7th	2	7	1	4	1	4	4	5
8th	2	7	1	4	4	14	7	8
9th	0	0	0	0	2	7	2	3
10th	5	17	4	14	4	14	13	15
11th	7	25	3	11	0	0	10	12
12th	11	40	13	46	10	36	34	40
13th	1	4	5	17	5	17	11	13
14th	0	0	0	0	1	4	1	1
Total	28	100	28	100	28	100	84	100
Mean	10.8		11.2		10.8		10.93	

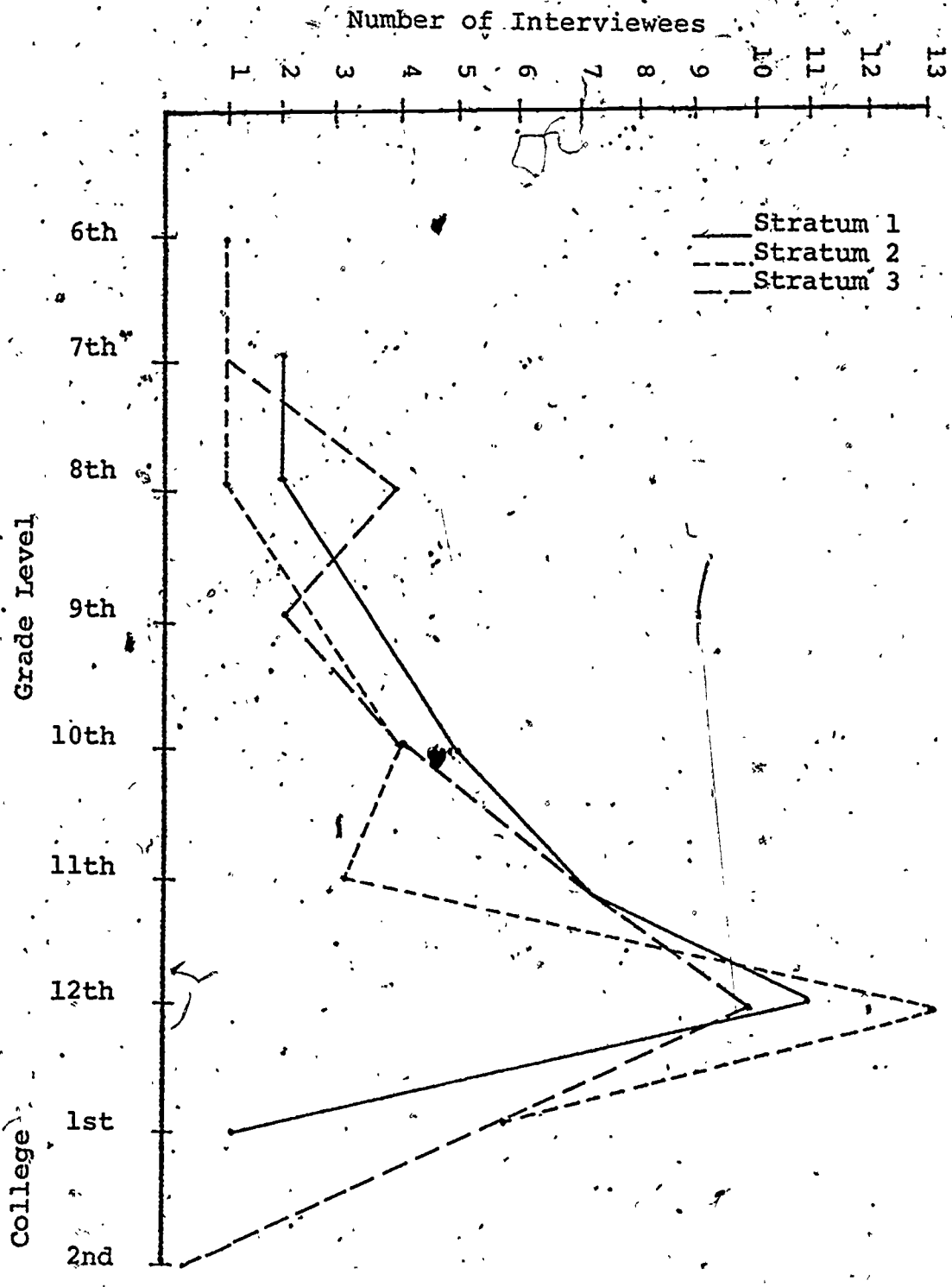

Figure 1. Educational Levels of Families.

that family income did not increase consistently with the increased number of years spent in school. The distribution of families by education showed an even proportion of all grade levels in each stratum. Of the families studied 40 percent of them went to the 12th grade in school; 14 percent went to college.

As was indicated in Table 2, page 47, the mean weekly expenditure by all families for food was $35.60 for a family of five. Families in stratum 1 spent $33.39 per week for food, those in stratum 2 spent $34.43, and those in stratum 3 spent $39.08 per week for food. The average per capita expenditure for food per week was $7.12. This was about 16 percent lower than the national per capita average reported by the United States Department of Agriculture through its Economic Research Service in May of 1974, and about one percent higher than the criterion set for this study. An expenditure of $7.00 per individual per week for food was used as the standard against which the families in this study were measured. It should be remembered that the standard set for this study was made in September and October of 1974, and it would vary in different geographical areas and in different eras. According to the standard set, families in stratum 3 spent sufficient amounts of money for food to have an adequate diet. Families in stratum 1 and stratum 2 had expenditures too low to purchase adequate diets even though the expenditures were not significantly lower than the amount

TABLE 2

DISTRIBUTION OF FAMILIES IN THE SAMPLE BY ANNUAL INCOME AND WEEKLY FOOD EXPENDITURE PER FAMILY PER INDIVIDUAL

Item	Stratum 1	Stratum 2	Stratum 3	Mean Expenditure
Range of Income Per Family	$4,800-5,099	$5,100-5,399	$5,400-5,700	
Range of Income Per Individual	960-1,019.80	1,020-1,075.80	1,080-1,1150	
Mean Weekly Expenditure for Food Per Family	33.29	34.43	39.08	$ 3[illegible]60
Mean Weekly Expenditure for Food Per Individual	6.66	6.89	7.82	7.12

required.

These findings were similar to those of Douglas,[1] reported in her study of the meat buying preferences and shopping habits of 125 urban homemakers. She found that the families had weekly food expenditures of $40.85 per family. The per capita expenditure per week was $9.20. She found family size to range from three to eleven members with a median range of income from $12,000 to $15,000 per year. Although there were similarities in the amounts spent for food, Douglas' study differed from this research in that the families involved in her research had much higher annual incomes than those investigated in this research. It is hoped that this study will be a realistic approach to the understanding of allocations made by families for food expenditures because the amount necessary for adequate nutrition was adjusted to family size and current food prices.

Purchases of Soft Drinks, Pet Foods, and Non-Food Items

As revealed in Table 3, page 49, fifty-four families purchased items such as detergents, and household paper products; twenty-seven bought food for pets; and forty-eight bought soft drinks. The costs of these items were not

[1] Blanche Jenoyee Douglas, "Meat Buying and Shopping Habits of 125 Urban Homemakers" (Masters thesis, Texas Woman's University, 1967).

TABLE 3

PURCHASES MADE BY THE FAMILIES IN EACH STRATUM AND IN ALL STRATA OF SOFT DRINKS, PET FOODS, AND NON-FOOD ITEMS

Item	Stratum 1 $4,800-5,099		Stratum 2 $5,100-5,399		Stratum 3 $5,400-5,700		Total Number of Responses		Total Responses
	Yes	No	Yes	No	Yes	No	Yes	No	
Purchased Soft Drinks	10	13	14	14	24	4	48	31	79
Purchased Non-food Items	15	13	16	12	23	5	54	30	84
Purchased Food for Pets	7	21	6	22	14	4	27	57	84

included in the weekly expenditure for food used in the analysis of data. Most food shoppers include the cost of such items in their food expenses. Williams[1] in a study of food buying practices of low income and middle income families found that the average weekly expenditures for non-food items purchased by families in her study was $1.16 per person. This was an important observation, for some people attribute all that they spend in the food market to food cost.

Knowledge of Basic Four Food Groups

Data in Table 4, page 51, showed that 70 percent of the families knew about the basic four food groups or similar food groups such as the basic seven. These data probably suggested that these families had sufficient information about the essentials of an adequate diet. Twenty-five or 33 percent, of the families, did not know about the food groups. This probably means that these families do not know what is necessary for an adequate diet and therefore may not select the correct foods for their families. More families in stratum 2 knew about the food groups than families in the other strata. Likewise, the families in stratum 1 knew less about the food groups than the families in other strata.

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[1]Shirley Walker Williams, "Food Buying Practices of Selected Low- and Middle-Income Families in Americus, Georgia" (Masters thesis, University of Alabama, 1972).

TABLE 4

KNOWLEDGE OF BASIC FOUR FOOD GROUPS BY EACH STRATUM AND ALL STRATA OF THE EIGHTY-FOUR FAMILIES

Families	Number of Responses		Percentage of Each Stratum		Percentage Eighty-Four Families		Total Responses
	Yes	No	Yes	No	Yes	No	
Stratum 1	18	10	64	36	21	12	28
Stratum 2	22	6	78	22	27	7	28
Stratum 3	19	9	68	32	22	11	28
Totals	59	25			70	30	84

However, previous studies and this research showed little correlation between nutrition knowledge and good food choices.

Family Planning Clinics

As indicated in Table 5, page 53, the data showed that 76 percent of the families in this study knew about family planning clinics. It was found that more families in stratum 1 knew about family planning clinics than the families in the other two strata. As family income increased, families knew less about family planning clinics. There appeared to be no appreciable differences in family size among the families studied. Inadequate nutrition may not be the result of a lack of knowledge about family size as related to family income. It is often thought that nutritional consumption is affected by the size of the family. It was obvious that the family's demand for food increases with increased family size. Research about families showed that family size increases very rapidly in the early years of marriage while family income grows more slowly throughout the working career. Many countries have begun to see their high rate of population and have begun to adopt national family planning policies and programs. These nationalistically inspired population policies have as their chief aim progress in social and economic spheres. From the available literature, it appeared that health

TABLE 5

KNOWLEDGE OF FAMILY PLANNING CLINICS IN EACH STRATUM AND IN ALL STRATA OF FAMILIES

Families	Number of Responses		Percentage in Each Stratum		Percentage of Eighty-Four Families		Total Families Responding
	Yes	No	Yes	No	Yes	No	
Stratum 1	24	4	86	14	28	5	28
Stratum 2	21	7	75	25	25	9	28
Stratum 3	19	9	68	32	22	11	28
Total	64	20			75	25	84

health had always been a crucial variable in population dynamics. Health apparently was affected by family planning variables such as family size, birth intervals, and maternal age.

What the Family Thinks It Needs for Better Health

When the families were asked what they needed other than money to have better health, 74 percent said that they wanted more nutrition knowledge, 66 percent, better food markets, 65 percent information on how to spend money; 50 percent indicated a need to know more about how to cook, 40 percent how to buy food, and 34 percent wanted family planning information. The families had a more pronounced interest in additional knowledge about nutrition than in any other expressed need. The data were presented in Table 6, page 55.

The Food Checklist

Nutritional practices and adequacy of diet were measured by the data on the three-day food checklist and the 24-hour food recall. The major consideration of the food checklist was the nutritional adequacy of the foods served to the family members. An adequate diet is widely accepted as including a daily intake of foods representing four basic food groups. No attempt was made in the checklist and the 24-hour recall to assess the quantity of foods served by families.

TABLE 6

WHAT THE EIGHTY-FOUR FAMILIES THINK THEY NEED FOR BETTER HEALTH

Factors Responded To	Number of Families Responded	Percentage of Total Family Responses
Better Food Markets	56	67
Nutrition Knowledge	62	74
How to Spend Money	56	67
How to Buy Food	42	50
How to Cook	35	42
How to Plan Meals	57	68
Birth Control Information	29	35

Using the most minimal nutrition measures of an adequate diet from each of eight food groups, the three-day dietary records of the families in each stratum show selected nutrients: protein, kilocalories, calcium, iron, vitamin A, ascorbic acid, thiamin, riboflavin, and niacin rich foods. The findings showed that meat, fish, poultry and alternates, the best sources of protein, were served more than recommended in each stratum. As indicated in Table 7, page 57, most families had intakes of protein food greater than the recommended allowances. Some writers have pointed out that the greater the amount of money in the pocket, the greater the amount of animal protein in the diet. Also, among the poor, one finds a low protein diet that is almost totally lacking in high quality protein.

Further, data revealed that fewer families served meat on Saturday than on any other day of the week. The meat served most often on Saturday was weiners. The least popular meats were turkey, veal, giblets, and port roast, as shown in Figure 2, page 58. Most survey data in Georgia showed that there was no group in the state lacking in protein nutrition. In many of the developed and under-developed countries there has been a continuous trend toward more animal protein in the diet. This appears to be characteristic of a progressively affluent society. The three-day food intake of meat, fish, and poultry of all eighty-two families are indicated in Table 14, Appendix E.

TABLE 7

COMPARISON OF THREE-DAY FOOD INTAKES OF FAMILIES IN THE THREE STRATA

Food	Number of Servings of Food			Recommended Number of Servings	Percentage		
	Stratum 1	Stratum 2	Stratum 3		1	2	3
Meat, Fish, Poultry and Alternates	86	83	97	82	104	101	119
Dairy Products	27	36	63	82	33	44	36
Eggs	24	31	32	54	44	57	59
Citrus Fruits and Juices	35	37	27	82	43	45	33
Other Fruits and Juices	34	17	21	82	41	20	26
Dark Green and Yellow Vegetables	84	55	61	54	155	101	112
Other Vegetables	108	91	75	166	65	54	45
Breads and Cereals	131	151	111	246	53	61	45

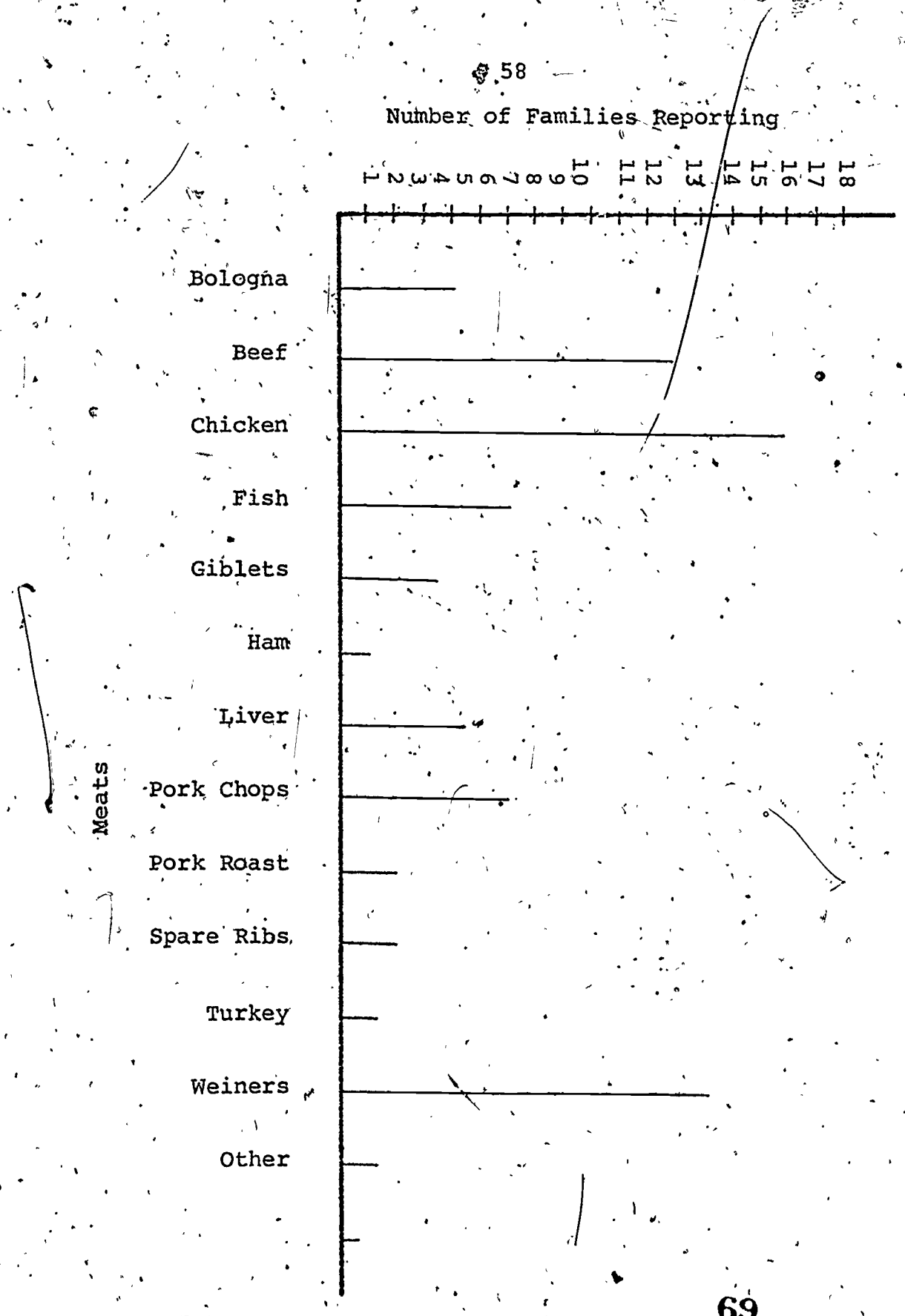

Figure 2. Meats and Number of Families Preparing.

The three-day food intake, by families, from the basic food group of milk and milk products and eggs are presented in Table 15, Appendix E. Milk was served more often than any other food in the group. Cheese was served more often than ice cream, and ice cream more often than ice milk. The dairy products served least often were yogurt and dairy ice cream. Fifty-two percent of the families served the recommended amounts of milk and milk products. There was a decline in the number of families serving milk on Saturdays. The low consumption of milk indicates that there was a deficiency of calcium in the diet. Also, the low consumption of eggs, a good source of protein, vitamin A, and iron, shows these nutrients to be lower than the recommended allowances.

Table 16, Appendix E, represents, the three-day food intake of deep yellow and green vegetables. Served most often as shown by the table, were yellow corn, sweet potatoes, turnip greens, and collards. The dark green and yellow vegetables served least often were acorn squash, broccoli, and kale. The vegetables served most often from the other group of vegetables were white potatoes, tomatoes, blackeyed peas, and cabbage. Vegetables served by most of the families on Saturday were pork and beans, white potatoes, blackeyed peas, and yellow corn. More families served dark green and yellow vegetables than any other vegetable.

Families in the three strata served more than the recommended allowances of dark green and deep yellow vegetables. The vegetables in this group were the best sources of pro-vitamin A. A diet was considered adequate in vitamin A if the family had three servings of these vegetables per week. The large production and availability of these vegetables and their consequent popularity and familiarity in southern diets may be the reason why families served more than the recommended amounts. There was little variation in the use of these vegetables among the strata of families. Of the total families studied, 36 percent served less than the recommended allowances of vegetables.

Indicated in Table 17, Appendix E, is the three-day food intake of fruits and fruit juices by all families. Citrus fruits and citrus fruit juices were served more often, the most popular being orange and lemonade. They were served by 40 percent of the families studied. Fruits served least often were prunes, watermelon, strawberries, apricots, blueberries, and pineapples. There was a decrease in the number of families serving fruits and fruit juices on Saturdays. These fruits are the best sources of ascorbic acid. The low use of fruits may be attributed to their high cost in 1974.

Breads and cereals, the best sources of kilocalories, riboflavin, thiamin, niacin, and iron were served less than the amounts recommended. The findings showed that corn-bread was the favorite of most of the families in all

strata and that, on the average, only 53 percent of the families have adequate servings of breads and cereals. Forty-seven percent have less than the amounts required. These data are revealed in Table 18, Appendix E.

When the foods served by the families were compared with the recommended servings in the basic four food groups, it was found that 71 percent of the diets were inadequate. Fifty-nine percent were inadequate in fruits, 48 percent in milk and milk products, 47 percent in breads and cereals, 46 percent in other vegetables, and 45 percent in eggs. The average family in all strata received more than 100 percent of the recommended amount of meat, fish, poultry and alternates, and dark green and deep yellow vegetables as shown in Table 8, page 62, and Figure 3, page 63 .

From the standpoint of food intake levels and percentages of intake below the recommended dietary allowances, the neglected nutrients were calcium, ascorbic acid, niacin, thiamin, riboflavin, and kilocalories.

When the average weekly food expenditures per capita of the families in each stratum and in all strata were compared with the national norms mean, the collected data as given in Table 9, page 64 , and Figure 4, page 65 , revealed that the families in this study spent on the average of sixty-eight cents to one dollar and eighty-four cents less per capita than the national norms mean. Also, the families spent from eleven cents to thirty-four cents less

TABLE 8

NUMBER OF SERVINGS OF FOOD FOR EIGHTY-TWO FAMILIES IN A THREE-DAY PERIOD COMPARED WITH RECOMMENDED SERVINGS OF THE BASIC FOUR FOOD GROUPS

Food Group	Three Day food Intake by Servings		
	Recommended Servings by Basic Four Group	Number of Servings by Families	Percentage of Recommended Servings
Meat, Fish, Poultry and Alternates	246	266	108
Milk and Milk Products	246	126	52
Citrus Fruits	246	99	40
Other Fruits	246	72	29
Dark Green and Yellow Vegetables	164	200	122
Other Vegetables	492	265	54
Breads and Cereals	738	393	53
Eggs	162	87	54

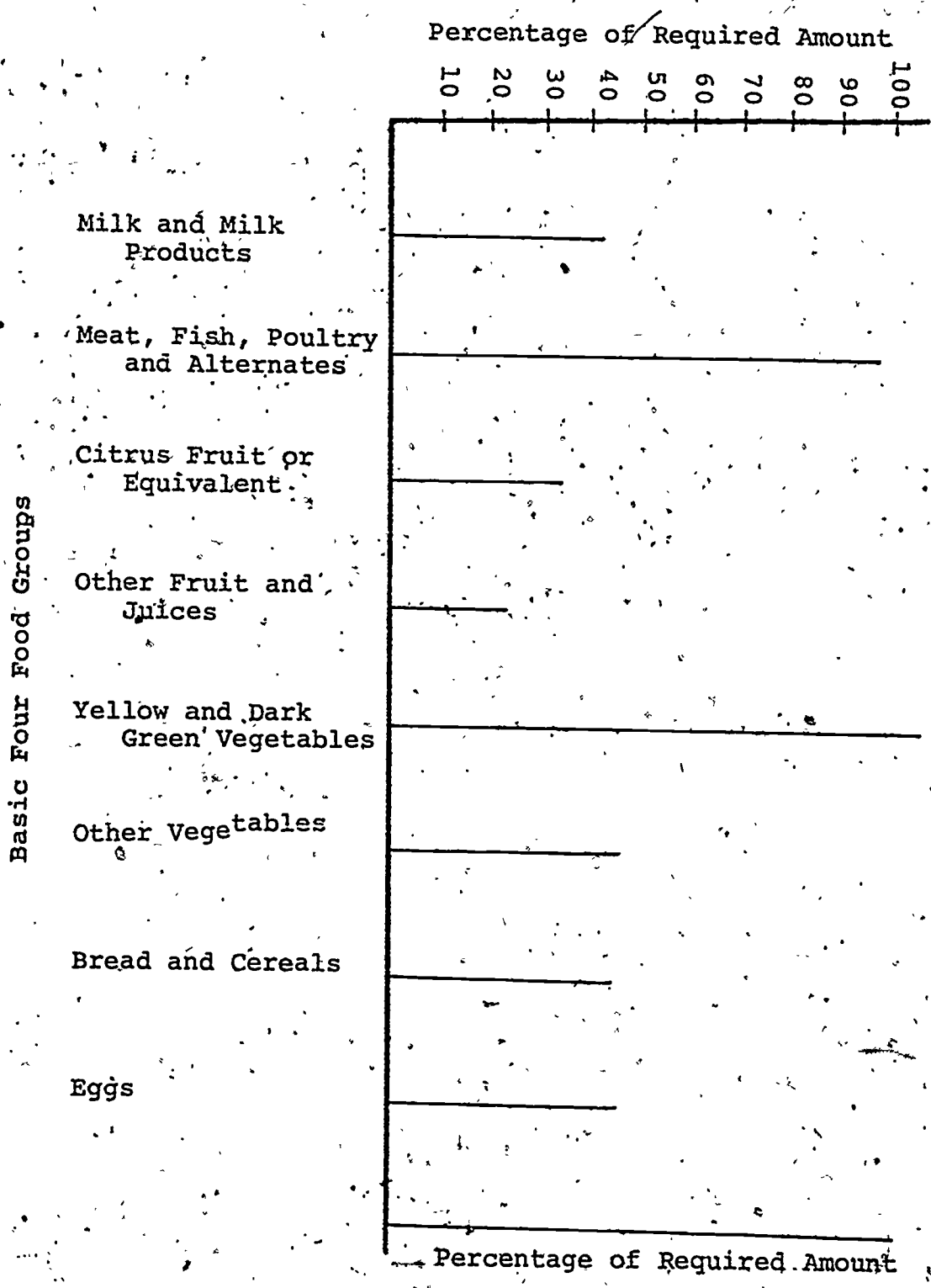

Figure 3. A Comparison by Percentage of Dietary Intake of one Stratum of Families Recommended Allowance of the Basic Four Groups.

TABLE 9

COMPARISON OF WEEKLY FOOD EXPENDITURES PER CAPITA OF EIGHTY-TWO FAMILIES WITH TWO STANDARDS

Strata of Families	Weekly Expenditure Per Capita	Established Weekly Measure Per Capita	U. S. Mean Per Capita	Amount and Percentage of Differences			
				Criterion Amt.	Criterion %	U.S. Amt.	U.S. %
Stratum 1 $4,800-5,099	$6.66	$7.00	$8.50	$ .34	5	$1.84	25
Stratum 2	6.89	7.00	8.50	.11	2	.61	12
Stratum 3	7.82	7.00	8.50	6.82	1	.68	8

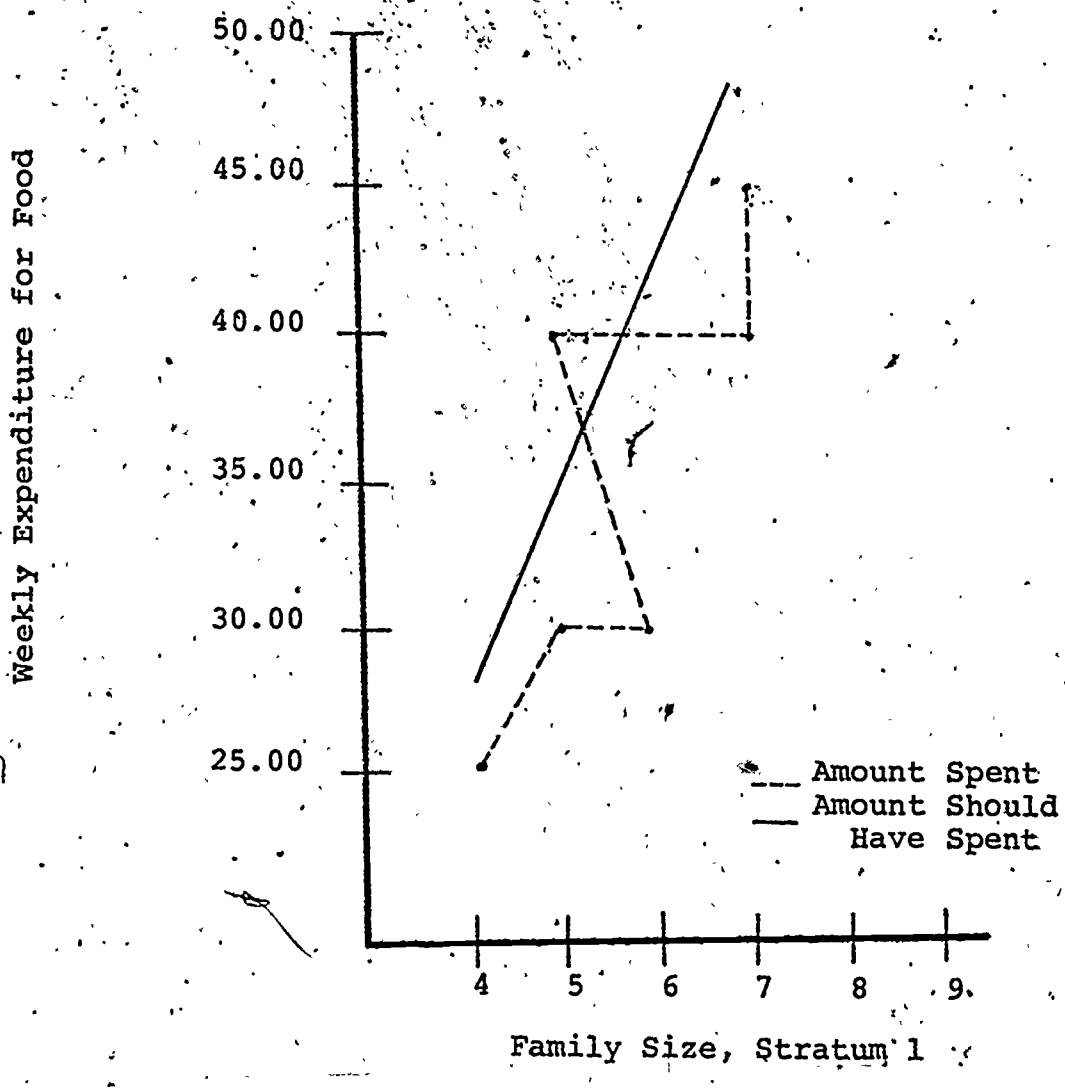

Figure 4. Comparison of Weekly Expenditure for Food by Family Size with the Criterion Per Capita Per Week.

per capita than the standard set for this study. The highest income stratum of families spent eighty-two cents more than the standard per capita developed for this study and sixty-eight cents less than the national norm of the United States. The greatest use of the basic four food groups was made among the families having the lowest incomes. There was no indication that knowledge of nutrition, income, and family size affected the adequacy of the family diets.

The low consumption of milk, cheese products, and fruits and vegetables was a reflection of poor dietary practices among the families in this study. Overcoming this will require a concerted effort from many sources to increase awareness of the need for and essentials of good nutrition. It was recognized in this study that the nutritional status of the family included more than dietary intake, and the dietary needs and requirements of the families were different. How nutrition educators can best provide optimal normal nutrition for families of limited income, education, and dietary habits remains a pressing problem.

Both from the standpoint of nutrient intake levels and percentage of families having intakes below the recommended amounts, the most neglected nutrients were ascorbic acid, calcium, and calories. This was true because the families characteristically serve low amounts of fruits and vegetables and milk. The foods most frequently consumed by

all families during the intake period are indicated in Table 10, page 68.

Table 10 presents the foods most frequently served by all of the families in this study. The data indicated that the most popular foods were chicken, milk, sweet potatoes, orange juice, and cornbread. It may be said that corn and sweet potatoes provided a large percentage of the protein needs of these families. The question was that of protein quality rather than protein quantity.

Knowledge of Nutrition, Income, and Family Size

The Pearson Product-Moment Correlation Coefficient was used to test the relationship between the variables of knowledge of nutrition, income, and family size of the families in stratum 1 and stratum 3. The data indicated that a relationship existed between the variables in the upper and lower strata families. A score of .88 indicated a direct relationship between the upper and lower strata for knowledge of nutrition. A score of .82 indicated an above moderate, and direct relationship between the upper and lower strata on knowledge of income. The data analyzed revealed a score of .89 on knowledge of family size and that there was an above moderate, and a direct relationship between families in stratum 1 and stratum 3.

Families in stratum 3 spent more money per capita for food than the families in stratum 1. Also, families in

TABLE 10

FOODS MOST FREQUENTLY CONSUMED BY ALL FAMILIES DURING THE THREE-DAY INTAKE PERIOD

Food	Number of Families	Percentage of Families
Chicken	49	58
Beef	40	48
Fish	38	45
Milk	75	88
Cheese	20	24
Eggs	20	109
Sweet Potatoes	39	46
White Potatoes	50	59
Yellow Corn	46	55
Orange Juice	30	36
Lemonade	24	29
Apples	21	25
Corn Bread	102	120
Grits	44	52
White Bread	98	117

stratum 3 spent more than the recommended amounts per capita for an adequate diet and families in stratum 2 spent less than the recommended amounts.

This research indicated that there was no significant difference in the average educational level of the families in the upper and lower strata. Both groups of families had a mean grade level of 10.8. Also, families in the upper income level, stratum 3, spent $1.16 more per person per week for food than those in stratum 1. This discovery may mean that the families in stratum 3 had better diets than families in stratum 1. It may be inferred from the findings of this research that the expenditure for food beared a more positive correlation to income than to family size and educational level.

Perisse, Sizaret, and Francois[1] compiled information from eighty or more countries across the globe and they found that there was a fairly precise relationship between the average income and the nature of the diet. According to family expenditures for food, fifty-six families of the eighty-four used in this study could have provided 100 percent of the recommended allowances of all nutrients required. The individuals in this study appeared to have short-term retention and did not apply their nutrition knowledge. More money may not be the answer for many of these

[1] J. Perisse, F. Sizaret and P. Francois, "The Effects of Income on the Structure of Diet," (FOA), Nutrition Newsletter 7, No. 3 (1969): 1-9.

families.

Hypothesis

It was hypothesized that there would be no difference between the means of the two strata, upper and lower, $U_1 - U_2$, equaled zero against the alternative hypothesis that it would be different in the following:

Knowledge of nutrition
Knowledge of income
Knowledge of family size

The t-test was used to test the hypothesis. As can be seen in Table 11, page 71, the analysis of the test scores on knowledge of nutrition in the upper and lower strata families, was compared. The t-test for comparing the means of the two groups indicated a t of .14, which was not significant. Hence, the null hypothesis ($H_o = U_1 - U_2 = 0$) was accepted; i.e., there was no significant difference between the two strata.

Violation of the assumption of normality in the t-test of $H_o : U_1 - U_2 = 0$ was shown to have only trivial effects on the level of significance and the power of the t-test and, therefore, was no cause for concern.

Data in Table 12, page 72, showed the analysis of the test scores on knowledge of income in the upper and lower strata families. The t-test for comparing the means of the two groups indicated a t of .52, which was not significant. Hence, the null hypothesis ($H_o = U_1 - U_2 = 0$) was accepted; i.e., there was no significant difference between the two

TABLE 11

TEST SCORES ON KNOWLEDGE OF NUTRITION OF FAMILIES IN THE LOWER AND UPPER STRATA

Test Scores	
Lower Stratum ($4,800-5,099)	Upper Stratum ($5,400-5,700)
$N_1 = 28$	$N_2 = 28$
$\bar{X}_1 = 77$	$\bar{X}_2 = 77.5$
$S_1^2 = 6255$	$S_2^2 = 5820$
$t = .14$	
$N = 56$ $\bar{X} = 77.2$	
$N = 84$ $\bar{X} = 73.5$	

TABLE 12

TEST SCORES ON KNOWLEDGE OF INCOME OF FAMILIES IN THE LOWER AND UPPER STRATA

Test Scores	
Lower Stratum ($4,800-5,099)	Upper Stratum $5,400-5,700)
$N_1 = 28$	$N_2 = 28$
$\bar{X}_1 = 73.64$	$\bar{X}_2 = 63.85$
$S_1^2 = 5708.18$	$S_2^2 = 2539.36$
$t = .52$	
$N = 56$ $\bar{X} = 68.8$	
$N = 84$ $\bar{X} = 68.2$	

strata.

Violation of the assumption of normality in the t-test of $H_o : U_1 - U_2 = 0$ was shown to have only trivial effects on the power of the t-test and hence was no cause for concern.

As indicated in Table 13, page 74, the test scores on knowledge of family size were compared. The t-test for comparing the means of the two groups indicated a t of .23, which was not significant. Hence, the null hypothesis ($H_o : U_1 - U_2 = 0$) was accepted; i. e., there was no significant difference between the two strata.

Violation of the assumption of the normality in the t-test of $H_o : U_1 - U_2 = 0$ was shown to have only trivial effects on the level of significance and power of the test and hence was no cause for concern. Therefore, the hypothesis was rejected at the .05 level of confidence.

There was no available research information related to the hypothesis in this study. Therefore, no comparisons could be made. It was interesting to note that more families in stratum 3 attended college than did families in stratum 1. Yet, both performed at the same level on the test on nutrition, income and family size as shown in Table 1, page 44 and Figure 1, page 45. The families in each of the two strata had knowledge of the

TABLE 13

TEST SCORES ON KNOWLEDGE OF FAMILY SIZE OF FAMILIES IN THE LOWER AND UPPER STRATA

Test Scores	
Lower Stratum ($4,800-5,099)	Upper Stratum ($5,400-5,700)
$N_1 = 28$	$N_2 = 28$
$\bar{X}_1 = 69.82$	$\bar{X}_2 = 65.54$
$S_1^2 = 5047.32$	$S_2^2 = 4900.00$
$t = .23$	
$N = 56$ $\bar{X} = 67.6$	
$N = 84$ $\bar{X} = 68.7$	

basic four food groups and both had inadequate diets. Families in stratum 3 spent more for food yet had the most inadequate diet.

CHAPTER VI

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to investigate the relationship between the level of nutritional consumption and the education, income, and family size of selected families in the southwest section of Atlanta, Georgia. The study was conducted in September and October of 1974. The sample consisted of eighty-four families who had annual incomes between $4,800 and $5,700 for four or more members; the average family size was five. The mean educational level of all the families was 10.93. The mean for stratum 1 was 10.8; for stratum 2, it was 11.2; and for stratum 3, it was 10.8. Further analysis of the findings derived from this study were summarized as follows.

Hypothesis

The hypothesis that the difference between the mean of the two strata, upper and lower: $U_1 - U_2$ equaled zero against the alternative hypothesis that it was different from zero in the areas of knowledge of nutrition, knowledge of income, and knowledge of family size, was rejected at the .05 level of confidence. Violation of the assumption of normality in the t-test $H_o : U_1 - U_2 = 0$ was

shown to have only trivial effects on the level of significance and the power of the t-test and hence was no cause for concern.

Objectives

Analysis of data using the Pearson Product-Moment Coefficient Correlation method showed that there was a relationship between nutrition knowledge, income knowledge, and knowledge of family size between the upper and lower strata families in the study. The analysis indicated that the three variables in the hypothesis considered to be factors in the attainment of minimum adequate nutrition were more highly correlated with the lack of use of knowledge than with the lack of knowledge, and with family size than with the amount of income. The most significant factor in the attainment of adequate levels of nutrition was not determined.

Shopping practices of the families revealed that, where income permitted, diets of the families were not different. That is, the diets were not adequate in quality nutrition regardless of the food expenditure. Most diets showed high levels of deviation from that which is considered adequate.

The findings indicated that the possession of knowledge of dietary needs had no significant impact on the choices of foods either among those individuals with a high school education, those with a college education or those

having neither. Most of the interviewees stated that they knew about the basic four food groups or a similar food group, and they scored about the same on the nutrition knowledge test. Data in the study indicated that there was little relationship between education and good food choices. The checklist data supported the fact that the families did not choose the correct foods for an adequate diet. The habitual choices of foods constituting the diets strongly indicated that people select mainly what they enjoy and basically those foods with which they were most familiar. Since there were no immediate negative effects recognizable to the individual, he pays little or no attention to the nutritional value or long range effects of his choices.

Families with incomes below $5,400 spent less money than the recommended amounts for adequate nutrition. Some families with more than $5,400 spent more than the recommended amounts. Yet, all families, on the average, had inadequate diets. The dietary findings were similar among the families within each stratum and among all strata of families at all educational levels. The mean amount of money spent for food per family of five per week was as follows:

Stratum 1	$33.29
Stratum 2	$34.43
Stratum 3	$39.08

The average amount of money spent for food by each family

in a week was $35.60. The average per capita expenditure was $7.12.

Families with the lower incomes purchased more fruit and vegetables than families with the higher incomes. In all the diets, total servings of fruit and vegetables were well below that recommended except for the dark green and deep yellow vegetables. Most diets were low in content on kilocalories because of the low use of breads and cereals. The low consumption of milk indicated a shortage in the diet of the recommended amounts of calcium. Stratum 1 had less income per capita and spent less per capita for food; yet, they had better diets than all families in the three strata. Both the mean annual and the mean weekly expenditures for food for most of the families in this study were below the national norm mean for the United States.

Conclusion

It appears that certain concepts that nutrition educators have been following in teaching may need some modification, for the final answers to the most controversial issues are still not available. The results of this study showed that some families in this research may be poorly fed for reasons other than the shortage of money. The related literature and findings in this study showed that many families do not know about or fully understand

the value of nutritious diets and that the food choices they make do not supply adequate nutrients.

One of the most significant findings of this study was that the consumption of fruits and vegetables by families in all strata is deplorably inadequate. A comparison of data on knowledge of nutrition, income, and family size with levels of nutrition consumption showed little relationship among these facets. Families did not apply what they knew about nutrition and money management when shopping for food, as shown in Table 7, page 57. Further, this research indicated that knowledge of nutrition and of income, in general, may not be as effective as it could be in changing the dietary behavior of people. Data reported by other researchers indicated the same high levels of dietary deviations described in this study. The findings suggested that it was not family size alone which influences the level of nutrient adequacy in diets; it was not income alone, nor was it the educational level. All of these facets appeared to be highly interrelated.

The interrelationships of these factors suggested that more money may not be the answer to better nutritional practices among the families in this study. However, families in stratum 1 may benefit from having more money. Families with the lowest per capita income appeared to have better nutrition and money management practices than those with the higher income. However, it was recognized that none of

the families received 100 percent of the recommended amounts of food. The low cost adequate diet developed for this study could have been adequate if the expenditures for food were 100 percent of the cost and the nutrients carefully selected.

Using the nutritional standards set for this research, twenty-eight families could have selected an adequate diet without increasing their expenditures for food. Fifty-six of the families would have required more money to purchase an adequate diet. The lack of sufficient income to buy the proper food was recognized in this study as an important constraint; however, in general, the higher the income of the family, the less adequate the diet was nutritionally. Apparently the low income families had established a better food purchasing pattern than the other families. The diets of the higher income families could have been adequate if the money had been wisely spent for food. The highest consumption of milk, cheese, fish, and poultry was found in families having the highest incomes.

Although there were families in this study who spent enough money per capita to have had an adequate diet, it must be remembered that what they obtained were the bare necessities of food. Also it should be clear that food is just one element of good nutrition; other necessities for life might be missing in the life of these families.

Family size may be expected to affect the per capita

food budget. Families with the highest income per capita spent more money per individual. This perhaps suggests that families take advantage of their relatively greater affluence mainly to eat more expensive foods. Family size has an important bearing on the functional use of income for food purchasing and consumption. Analysis of the data indicated that family size was more related to income than to knowledge of nutrition or knowledge of income. This is explained by the fact that the average size family was five and the average food expenditure per week per capita was $7.12 which was sufficient to purchase an adequate diet. Family size probably related closely to food consumption habits.

Knowledge of nutrition appeared to have little to do with dietary practices. Usually it is expected that individuals relate that which they know to what they do; however, overt nutrition behavior in relation to knowledge was generally low in all three strata of families. Also, a little more money per family did not make a significant difference in the dietary practices of these families. The results revealed that nutritionally adequate diets of these families depended on many factors which were unique to them. They varied not only in terms of income, but also in regard to money management, family size, nutrition knowledge, and other less easily identifiable factors.

Recommendations

The analysis of the findings in this research dealing with knowledge of nutrition, income, and family size, and nutritional consumption revealed information which may be relevant for instructors engaged in developmental, corrective, or preventive programs in nutrition.

There appeared to be a need for a different approach to nutrition education. Educators, for example, might consider integrating nutrition courses with other subjects and stylizing the presentation of nutrition information to individual personal needs. Educational disciplines such as social sciences, chemistry, and biology may consider nutrition education as a part of their curricula. Since food is intimately woven into the fabric of society, it is imperative that educators redirect their priorities to give more consideration to the application of nutritional knowledge by all people in all countries.

There is a need for more research in the Atlanta community regarding nutrition, money management, and dietary behavior. Therefore, the next planned step of this research should be to use the findings of this investigation to devise content information and methods of instruction in nutrition for these families. In addition, it would be necessary to teach the families, using the devised plan, integrating knowledge of nutrition, money management, and family planning information. An evaluation of the plan

would be made on the bases of changes in behavior of the families and compared with a parallel study of the behavior of families from the same population who did not participate in the educational program. Plans for such a problem could be devised in the college home economics classes, tested in the classes, implemented in the community, evaluated, and made available for educational use by other educators.

Interdisciplinary teaching in the natural and social sciences, in humanities, and in home economics might be needed to solve problems of family health. In this age there should be a high priority on research significant to better dietary habits.

All educators in various positions must help to increase the usefulness of research findings by making them more readily available to professions and to the public. This researcher proposes to publish a series of articles in the local news media concerning the findings in this study and emphasizing the need for continued research and its application for the solution of family health problems.

Educators must be among the first to anticipate and recognize change, and to weigh the capacities of the family to meet new demands, and to set new directions for programs of benefit to families. Nutrition education might begin with preschool training and continue throughout life. Similar studies could be conducted with families in other geographical areas to get a more universal picture of the problems of the poor.

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APPENDIX A

SURVEY

The purpose of the survey is to make initial contacts with families to enlist their cooperation in a research study.

DIRECTION: Please fill in the blanks with the appropriate information.

1. Name of family member _____

2. Address of family member _____

_____

3. Telephone number where family can be reached _____

4. Number of children in the family _____

5. Can we interview you in your home for this study? _____

What special day? _____ What special time? _____

APPENDIX B

INTERVIEW NUMBER _____

DATE OF INTERVIEW _____

TIME OF INTERVIEW _____ Began _____ A.M. _____ P.M.

Ended _____ A.M. _____ P.M.

Statement:

Your cooperation with an educational research project, conducted by an Atlanta Home Economist, will be greatly appreciated. All interview information received is confidential. No names will be used.

The purpose of this study is to determine the relationships between nutritional requirements, family income, and family size of a selected group of families living in the Southwest area of Atlanta, Georgia. The information from this research reveals some types of food problems faced by parents. The researcher seeks to identify some comparable facts, from which methods of approach can be developed for better ways to meet the nutritional needs of families.

The researcher is particularly interested in obtaining your responses to some questions. Because of your experiences, as a parent who is concerned with the growth and development of children, you were chosen to participate in the study.

Directions: Please give the information requested in the questions by either a check (x), or fill in the blanks with the appropriate answer(s).

General Information

1. How many members are there in your family? _____

   How many are children? _____

2. How much of your weekly or monthly income do you spend for food? _____

3. About how much of your weekly or monthly income is this?

   1/4 of it? _____

   1/3 of it? _____

   1/2 of it? _____

4. Does the amount of money spent for food include soft drinks or soft drink mixes? Yes ☐ No ☐ Sometimes ☐

   If the answer is "Yes", ask question no. 5

5. About how many cartons or packages of soft drink mixes do you buy each week? Cartons_____ Packages_____

6. Do you buy items other than food in the food market? Yes☐ No☐ Sometimes ☐

   If the answer is "Yes", ask question no. 7

7. Is the cost of these items included as part of your weekly expenditures for food? Yes☐ No☐ Sometimes ☐

8. What are some of the items you buy and about how much do you spend for them?

   ITEMS & $ AMOUNTS

   _____

   _____

   _____

   _____

9. Do you have animals for whom you purchase animal food? Yes☐ No☐

10. Do you know about the Basic-Four food groups? Yes☐ No☐ Other☐

11. Do you know about the information and services of any family planning clinic in your neighborhood of the City of Atlanta? Yes☐ No☐ Other☐

Directions: For statements below, please check (x) in one (1) column the answer best describing your knowledge.

Meaning of Code	
SA	- Strongly Agree
A	- Agree
N	- Neutral
D	- Disagree
SD	- Strongly Disagree

KNOWLEDGE OF NUTRITION

	SA 1	A 2	N 3	D 4	SD 5
12. The health of pregnant woman determines the baby's health.	☐	☐	☐	☐	☐
13. Infants have a better chance of survival if the mother is well nourished throughout pregnancy	☐	☐	☐	☐	☐
14. There is some fuel in every food.	☐	☐	☐	☐	☐
15. The main food sources of energy (fuel) are starches, sugars, and fats. These foods do not build tissues.	☐	☐	☐	☐	☐
16. The best sources of proteins are meat, eggs, and milk. Dry beans and peas are the next best sources of proteins.	☐	☐	☐	☐	☐
17. The protein value of cereals, breads, and vegetables can be increased by combining them with milk or eggs.	☐	☐	☐	☐	☐
18. Meat/vegetable stews provide a highly nutritious combination of food protein.	☐	☐	☐	☐	☐
19. Whether you are young or old, it is a good thing to have milk in the diet.	☐	☐	☐	☐	☐
20. Milk is a good source of calcium.	☐	☐	☐	☐	☐
21. One good reason for eating dark green vegetables is for their iron content.	☐	☐	☐	☐	☐
22. A deep yellow vegetable (carrots, sweet potatoes) can be used for a dark-green vegetable in a meal and give the same good source of Vitamin A.	☐	☐	☐	☐	☐
23. Tomatoes can be used in the place of oranges, grapefruits, or tangerines in a diet.	☐	☐	☐	☐	☐
24. One way to make sure of getting Vitamin B in the diet is to use regularly bread and flour made from whole grain or enriched flour.	☐	☐	☐	☐	☐
25. When you eat a variety of foods you are pretty sure of getting the vitamins and minerals you need.	☐	☐	☐	☐	☐

	SA 1	A 2	N 3	D 4	SD 5
26. Large quantities of starchy foods and sugars are not good for one's health.	☐	☐	☐	☐	☐
27. Body muscles, blood, bones, glands, nerves, skin are made up basically of proteins.	☐	☐	☐	☐	☐
28. Protein is needed for body maintenance and/or growth from the beginning of pregnancy to the end of life.	☐	☐	☐	☐	☐
KNOWLEDGE OF INCOME					
29. If you were given $50.00 to spend as you wish, you should spend all of it.	☐	☐	☐	☐	☐
30. The best way to shop is to use a food plan and a shopping list.	☐	☐	☐	☐	☐
31. A wise shopper checks the different stores before making decisions on what to buy.	☐	☐	☐	☐	☐
32. You can cut down on cost of food if you reduce the quantities of meat, fish, or poultry by one-third and increase the amount of white potatoes and cereals by one-fourth, and still have an adequate diet.	☐	☐	☐	☐	☐
33. Large well-fleshed poultry provides more meat per pound than smaller ones (chickens, turkeys, etc.)	☐	☐	☐	☐	☐
34. Cheaper cuts (chuck roast) of meat may have more lean and less fat than more expensive cuts (T-bone) and often give you more for your money.	☐	☐	☐	☐	☐
35. You should consider the cost of bone and fat when buying meat.	☐	☐	☐	☐	☐
36. Grits, oatmeal, and cream of wheat are good food buys because they make nutritious meals.	☐	☐	☐	☐	☐
KNOWLEDGE OF FAMILY SIZE					
37. As family size increases and children grow older, the food bill increases as do other financial commitments of the family.	☐	☐	☐	☐	☐
38. The spacing of children is important to the family's health and well-being.	☐	☐	☐	☐	☐
39. Children should be spaced two years apart.	☐	☐	☐	☐	☐
40. You can be a better parent to one or two children than you can to four or five.	☐	☐	☐	☐	☐

	SA 1	A 2	N 3	D 4	SD 5
41. People can exercise control over their childbearing practices.	☐	☐	☐	☐	☐
42. People are morally obligated to limit their family size.	☐	☐	☐	☐	☐
43. Size of family is important in determining the nutritional status and health of the family.	☐	☐	☐	☐	☐
44. Family income should be used in determining how large a family should be.	☐	☐	☐	☐	☐
45. A rapid increase in population leads to a shortage of goods and a rise in prices.	☐	☐	☐	☐	☐
46. The standard of living of the people in a country depends on the total national income and the population of that country.	☐	☐	☐	☐	☐
47. An example of a family planning clinic in your neighborhood would be "Planned Parenthood"	☐	☐	☐	☐	☐
48. Family planning should be used to make decisions about your family size.	☐	☐	☐	☐	☐
49. Family planning should be taught to all children.	☐	☐	☐	☐	☐
50. Is it all right for couples to do something to keep from getting pregnant or to keep from having more children than they want?	☐	☐	☐	☐	☐
51. Every woman should have as many children as she wants.	☐	☐	☐	☐	☐
52. It is all right for a woman or man to be operated on to prevent pregnancies.	☐	☐	☐	☐	☐
53. Sometimes it is necessary for a woman to have a pregnancy aborted.	☐	☐	☐	☐	☐
54. A baby born too soon can ruin the hopes and dreams of a man or woman - no matter how much they love each other and the baby.	☐	☐	☐	☐	☐
55. Family planning is a human right - the right to make common sense of our lives, the right of every child to be wanted, and the right of mothers and fathers to have the children they are able to nourish and care for.	☐	☐	☐	☐	☐
56. Families can have babies when they are ready for them - if they use birth control.	☐	☐	☐	☐	☐

GENERAL INFORMATION

57. What do you think you need to have to provide for your family better health (other than more money)? (Check items desired.

Better food markets	_____
Nutrition knowledge	_____
How to spend money	_____
How to buy food	_____
How to cook	_____
How to plan meals	_____
Birth Control information	_____
Other	_____

58. Tell us the last grade you completed in school. _____

Thank you for responding to the questions and statements. There should be a follow-up on this at a later date. We hope something good will come out of it.

THREE DAY FOOD INTAKE

CHECK LIST

Three Day Food Intake

Directions: Please check, in the appropriate column, the foods your family were served each of the days listed. At the end of the third day, please mail the check list in the self-addressed and stamped envelope.

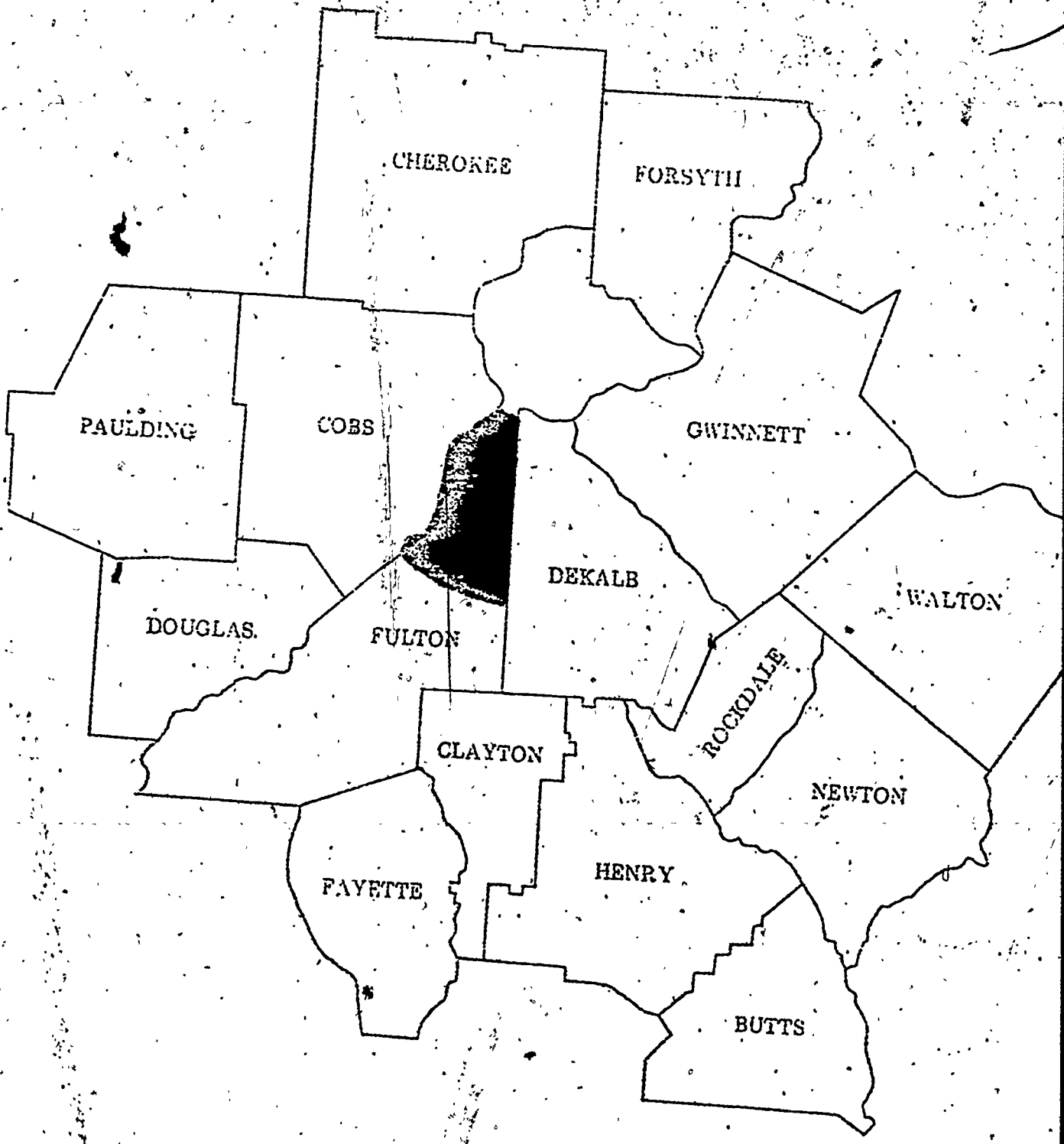
BASIC FOOD GROUP	NAME OF FOOD	THURSDAY 1ST DAY	FRIDAY 2ND DAY	SATURDAY 3RD DAY	COMMENTS
Meat, Fish Poultry & Alternatives	Bologna				
	Beef				
	Chicken				
	Fish				
	Giblet				
	Ham				
	Kidney				
	Lamb				
	Liver				
	Pork Chop				
	Pork Roast				
	Spare-ribs				
	Turkey				
	Veal				
	Weiner				
	Other				
Yellow Vegetables	Acorn Squash				
	Butternut Squash				
	Carrot				
	Sweet Potato				
	Yellow Corn				
Dark-Green Vegetables	Bell Pepper				
	Broccoli				
	Collards				
	Kale				
	Mustard				
	Spinach				
	Turnip				
	Other				
Other Vegetables	Blackeye Pea				
	Cabbage				
	Celery				

BASIC FOOD GROUP	NAME OF FOOD	THURSDAY 1ST DAY	FRIDAY 2ND DAY	SATURDAY 3RD DAY	COMMENTS
Other Vegetables (Cont'd.)	Corn (White)				
	Field Pea				
	Green Bean				
	Kidney Bean				
	Lettuce				
	Okra				
	Peanut				
	Pork & Bean				
	Red Bean				
	Summer Squash				
	Tomato				
	White Potato				
	Other				
Citrus Fruits and Juices	Grapefruit				
	Grapefruit Juice				
	Lemonade				
	Limeade				
	Orange				
	Orange Juice				
	Tangerine				
	Tangerine Juice				
Other Fruits and Juices	Apple				
	Apricot				
	Banana				
	Blueberry				
	Cantéloupe				
	Grape				
	Peach				
	Pear				
	Pineapple				
	Plum				
	Prune				
	Strowberry				
	Watermelon				
	Other				
Eggs	Egg				

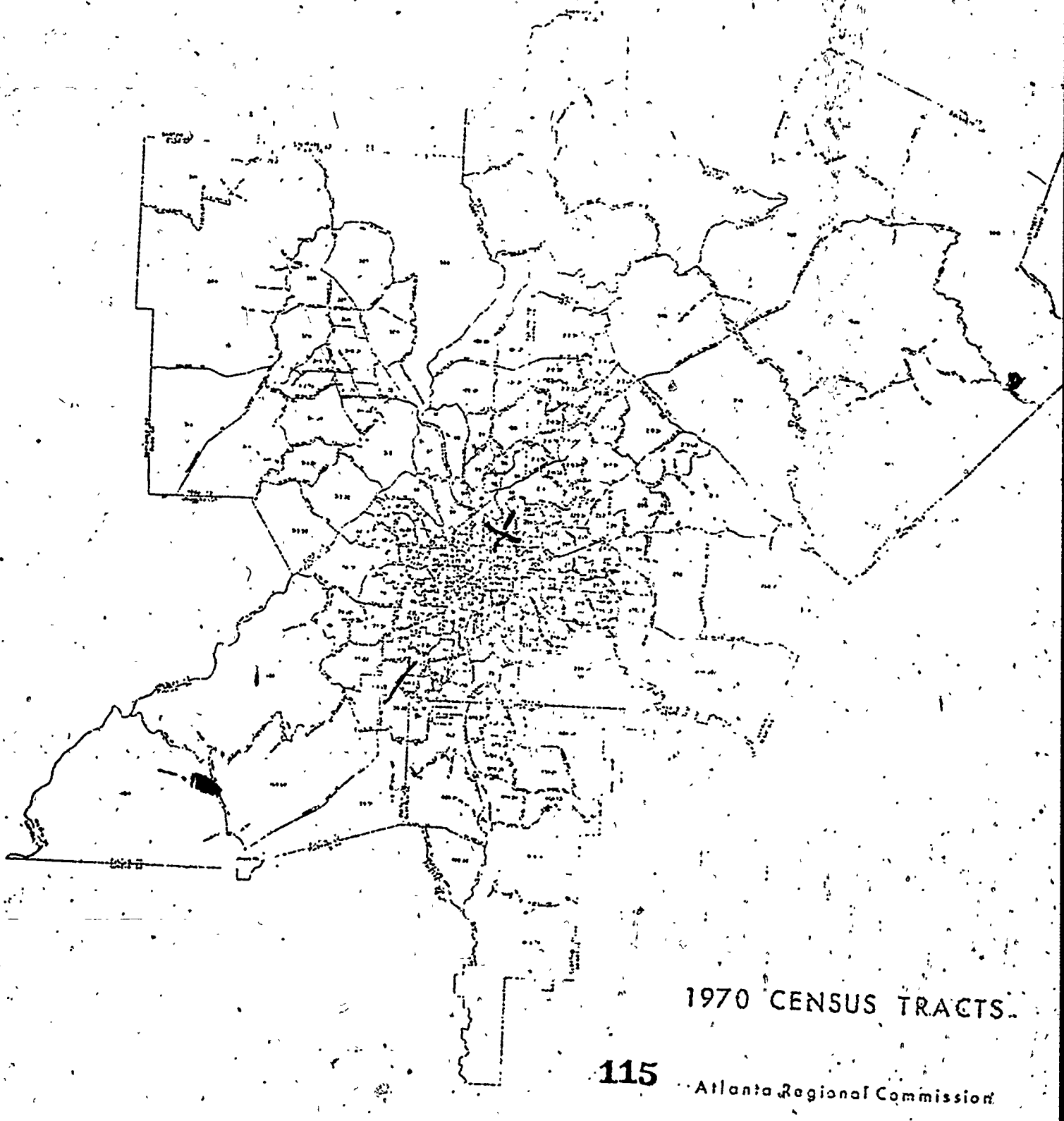
BASIC FOOD GROUP	NAME OF FOOD	THURSDAY 1ST DAY	FRIDAY 2ND DAY	SATURDAY 3RD DAY	COMMENTS
Dairy Products	Cheese				
	Dairy Queen				
	Ice Cream				
	Ice Milk				
	Milk				
	Yogurt				
	Other				
Breads and Cereals	Biscuit				
	Brown Bread				
	Cereal (Ready to Eat)				
	Corn Bread				
	Grits				
	Macaroni				
	Oatmeal				
	Pancake				
	Rice				
	Roll				
	Spaghetti				
	Waffle				
	White Bread				
	Other				

APPENDIX C

Map C



Map 1.-Metropolitan Atlanta by counties. The darkened area shows the approximate site used in this study.



Map 2.-Metropolitan Atlanta by Census tracts. The approximate area of tracts used in this study is shown by an X.

APPENDIX D

CHART 1

RECOMMENDED DIETARY ALLOWANCES COMPARED WITH THE RDA OF THE NATIONAL RESEARCH COUNCIL

Amount for a Family of Four			Amount Per Individual		
Nutrient	NRC RDA	Control Diet	Nutrient	NRC RDA	Control Diet
Protein	1008 gms	720 gms	Protein	252 gms	180 gms
Kcal	53,400 Kcal	53,400 Kcal	Kcal	13,350 Kcal	13,350 Kcal
Fat	780 Kcal	780 Kcal	Fat	195 Kcal	195 Kcal
Vitamin A	18,000 RE'	12,000 RE'	Vitamin A	4,500 RE'	3,000 RE'
Ascorbic Acid	1,020 mgs	720 mgs	Ascorbic Acid	255 mgs	180 mgs
Niacin	360 mgs	360 mgs	Niacin	90 mgs	90 mgs
Riboflavin	31 mgs	31 mgs	Riboflavin	8 mgs	8 mgs
Thiamin	27 mgs	27 mgs	Thiamin	7 mgs	7 mgs
Calcium	19,200 mgs	12,200 mgs	Calcium	4,800 mgs	3,240 mgs
Iron	290 mgs	192 mgs	Iron	73 mgs	48 mgs

RE' = Retinol Equivalents

CHART 2

FOOD GROUPS, THEIR EQUIVALENTS, AND NUTRIENTS SUPPLIED

Food Group and Amount		Food Equivalent and Amount	Nutrient Supplied
Meat, Fish, Poultry and Liver 1 Oz (28 Gms)	=	1 Egg 8 Oz Milk 1 Oz Cheddar Cheese	Protein B-Vitamins
Milk 8 Oz (235 Gms)	=	1.5 oz Cheddar Cheese 3/4 lb Cottage Cheese 1 pint Ice Milk 1 Pint Ice Cream	Calcium, Protein and B-Vitamin
Fruits: Citrus 4 Oz Orange Juice (114 gms)	=	4 oz grapefruit juice 1 medium orange 1/2 grapefruit 8 oz tomato juice	Ascorbic Acid, Vitamin A and Iron
4 Oz Other Fruits (114 gms)	=	1 apple, pear, banana, peach 1/4 canteloupe 15 large cherries 2 plums 10 large strawberries	B-Complex Vitamins
Vegetables 1/2 to 2/3 yellow	=	1/2 to 2/3 cups	
Leafy green or deep yellow 4 oz to 6 oz	=	Mustard greens Turnip greens Spinach Kale Collards Punpkin Sweet Potatoes Butternut squash Sweet green peppers Carrots Broccoli	Iron, Iodine, Calcium, Vitamin A Ascorbic Acid

CHART 2-Continued

Food Group and Amount		Food Equivalent and Amount	Nutrient Supplied
Other vegetables 4 oz (114 gms)	=	1/2 cup Beets, Cabbage, Green beans, Green peas, Sauerkraut, Tomatoes, Yellow turnips, Rutabaga	B-Complex
Breads and Cereals 2 oz (56 gms)	=	1/2 cup cooked grits 1/2 cup cooked rice 1 slice enriched bread 1 medium muffin 2 graham crackers 1 medium biscuit 5 saltine crackers 1 (2" square) cornbread 1 medium sized baked potato 1/2 cut mashed potato 1/4 cup baked beans 1/3 cup corn 1/3 cup corn	B-complex Vitamins, Calcium, and incomplete protein
Eggs (56 gms)	=	1 oz meat 8 oz milk 1 oz cheddar cheese	Protein fat, Vitamin A, and Iron
Potato, 1 medium	=	2 oz bread or cereal	Kcal, calcium, and Ascorbic acid
Fats and Oils	=		Kcal, Essential and Ascorbic acid

CHART 2-Continued

Food Group and Amount		Food Equivalent and Amount	Nutrient Supplied
Salt pork or bacon 3 oz (84 gms)	=	1 tablespoon mayonnaise 2 tablespoons salad dressing 2 tablespoons french dressing 1 tablespoon salad oil 1 tablespoon margarine or butter	Kcal
Dry peas and beans 1/2 cup (raw)	=	1 cup skim milk 1 oz meat	Particularly incomplete protein and B-Vitamin

APPENDIX E

TABLE 14

THREE-DAY FOOD INTAKE OF MEAT, FISH, POULTRY, AND ALTERNATES FOR EIGHTY-TWO FAMILIES

Food	Thursday	Friday	Saturday	Total Served
Bologna	5	5	2	12
Beef	18	6	16	40
Chicken	23	19	7	49
Fish	6	28	4	38
Giblets	2	1	1	4
Ham	6	3	2	11
Liver	9	3	4	16
Pork Chops	10	9	7	26
Pork Roast	2	1	3	6
Spareribs	1	3	9	13
Turkey	1	1	0	2
Veal	0	1	2	3
Weiners	9	2	24	35
Other	12	3	2	17

TABLE 15

THREE-DAY FOOD INTAKE OF MILK AND MILK PRODUCTS AND EGGS FOR ALL EIGHTY-TWO FAMILIES

Food	Thursday	Friday	Saturday	Total Served
Eggs	30	22	33	92
Dairy Products				
Cheese	8	7	5	20
Dairy Queen	1	0	2	3
Ice Cream	2	4	10	16
Ice Milk	4	3	2	9
Milk	42	24	19	75
Yogurt	0	1	1	2
Other	3	3	1	7

TABLE 16

THREE-DAY FOOD INTAKE OF VEGETABLES FOR ALL EIGHTY-TWO FAMILIES

Food	Thursday	Friday	Saturday	Total Served
Yellow and Dark Green Vegetables				
Acorn squash	1	0	0	1
Carrots	7	2	0	9
Sweet Potatoes	23	10	6	39
Yellow corn	22	13	11	46
Bell pepper	1	2	5	8
Broccoli	0	1	1	2
Collards	21	5	10	36
Kale	1	1	0	2
Mustard	2	2	3	7
Spinach	5	4	4	13
Turnip Greens	15	14	9	38
Other	0	4	1	5
Other Vegetables				
Blackeyed peas	12	8	13	31
Cabbage	6	13	10	29
Celery	6	2	2	10
White corn	2	6	1	9
Field peas	1	2	4	7
Green beans	9	3	5	17
Kidney beans	1	2	3	6
Lettuce	13	4	6	23
Okra	5	5	6	16
Peanuts	3	2	2	7
Pork and beans	4	5	16	25
Red beans	0	1	2	3
Summer squash	2	0	1	3
Tomatoes	14	12	6	32
White potatoes	9	25	17	50
Other	5	1	0	6

TABLE 17

THREE-DAY FOOD INTAKE OF FRUITS AND JUICES FOR ALL EIGHTY-TWO FAMILIES

Food	Thursday	Friday	Saturday	Total Served
Citrus fruits and juices				
Grapefruit	4	5	1	10
Grapefruit juice	4	2	2	8
Lemonade	11	9	4	24
Limeade	2	4	3	9
Orange	10	7	5	22
Orange juice	12	8	10	30
Other fruits and juices				
Apples	11	14	6	21
Apricots	0	0	1	1
Bananas	4	6	4	14
Blueberries	1	1	0	2
Canteloupe	2	1	2	5
Grapes	3	1	4	8
Peaches	6	4	1	11
Pineapple	2	0	1	3
Pears	2	0	2	4
Plums	0	1	0	1
Prunes	0	1	1	2
Strawberries	0	0	1	1
Watermelon	0	0	1	1

TABLE 18

THREE-DAY FOOD INTAKE OF BREADS AND CEREALS FOR ALL EIGHTY-TWO FAMILIES

Food	Thursday	Friday	Saturday	Total Served
Biscuits	8	11	10	29
Brown Bread	3	4	1	8
Cereal (R to eat)	15	13	12	40
Cornbread	43	33	26	102
Grits	16	15	13	44
Macaroni	4	1	4	9
Oatmeal	1	1	1	3
Pancakes	1	2	5	8
Rice	10	7	10	27
Rolls	6	5	7	18
Spaghetti	2	1	4	7
Waffles	0	0	1	1
White bread	33	29	36	98