

A NUTRITIONAL SURVEY OF CERTAIN KANSAS  
HOUSEHOLD GROUPS ON DIFFERENT WELFARE PLANS

by 4589

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## INTRODUCTION

Interest in the subject of nutrition has increased within the last few years. United States government agencies have promoted nutrition related programs concerned with improvement of the health and well-being of low-income families such as Commodity Distribution, Food Stamp, and Public Assistance Programs.

Results of the National Nutrition Survey conducted by Schaefer and Johnson (1) infers that the general health of individuals was not at a level expected from a country with the highest standard of living in the world. There is evidence that undernutrition over an extended period of time lowers the physical condition and the learning ability and behavior of children. An awareness that nutrition levels parallel the psychological and physiological development from fetal stage through the full pendulum of life increases the significance of raising the nutritional level of our population.

It has been the policy of the United States Department of Agriculture to make selected foods available to low-income families who need them to prevent, correct, or improve nutritional deficiencies. This has been done by the Commodity Distribution Program, Food Stamp Program, and Public Assistance Program.

Limited data were found in the literature related to nutritional level of participants in programs of welfare assistance. Therefore this study was designed to survey selected low-income household groups in three Kansas counties who



received federal assistance in some form. Differences in the recommended daily food intake of respondents attributable to plan of assistance, level of income, household group size, age and educational level were ascertained. Differences in the recommended daily food intake of female respondents attributable to weight classification and skinfold thickness measurements also were determined.

## REVIEW OF LITERATURE

### Types of Federal Government Food and Welfare Programs

Three major welfare programs used in Kansas to aid the poor and needy are: (a) Commodity Distribution Program, (b) Food Stamp Program, and (c) Public Assistance Program. Rules for participation in any of the programs have been established and eligible persons may choose whether or not they wish to take part.

Commodity Distribution Program. Legislative authority for food donation for the needy was given by the Agricultural Act of 1935 and 1949, as amended. These authorities relate, respectively, to surplus crop removal and price-support legislation. The program is administered nationally by the United States Department of Agriculture's (USDA) Consumer and Marketing Service through its Commodity Distribution Division (2, 3).

The USDA initiated, in 1961, a policy making a wider variety of foods available for this program. They encouraged the states to expand their distribution operations to include more cities and counties. Great expansion in food availability and participation has taken place in the program since 1960.

The list of available surplus commodities depends on the status of the federal inventory and current agricultural market conditions. During fiscal year 1969 needy families received the following food items: dry beans, bulgar, corn meal, whole wheat and all purpose flours, canned meat, lard, nonfat dry and evaporated milks, peanut butter, raisins, rolled wheat,

butter, cheese, canned whole chicken, scrambled egg mix, farina, a can of fruit or vegetable, fruit or vegetable juice, milk beverage mix, dehydrated potatoes, and corn syrup (4,5).

Commodities are made available for "relief purposes" and for "assistance of the needy," i.e., for impoverished groups as unemployed, low-income groups, and many persons receiving benefits under Social Security or grants under public assistance. Total food donations to eligible needy groups in 1969 amounted to approximately 1.3 billion pounds. The Commodity Distribution Program generally has been the primary means available to the USDA for increasing availability of foods and improving the nutrition of the needy recipients (2).

Food Stamp Program. The Food Stamp Act of 1964 was established to help correct the deficiencies of the commodities program by allowing the poor to choose their own foods. Through the program, needy families exchange the amount of money normally spent for food for coupons of higher monetary value. The coupons may be used to buy any food, at retail stores, except certain imported items (2).

The USDA's Consumer and Marketing Service administers the program at the federal level and supervises participating retailers. The state agency for public assistance is responsible for the operation of the program within the state and certifies families as to eligibility (2, 6).

First reports on the major expansion of the Food Stamp Program, announced in January, 1970, by USDA, indicated that more low-income people than formerly were receiving greatly

increased benefits. The new schedules of purchase payments, bonuses, and coupon allotments have attracted more low-income people to the program and provided substantial improvements in benefits (7).

Public Assistance Programs. The Act governing the public assistance programs authorizes federal grants-in-aid to states for programs of assistance to needy, aged, blind, disabled, and families with dependent children. These acts, aided by the Social Security Amendments of 1965, authorize federal grants to states for a program of medical assistance. Persons receiving cash payments under the other public assistance titles are eligible for the medical assistance (3, 8, 9).

States must submit a plan in conformity with the provision of the Act, as interpreted by the Welfare Administration in order to receive federal funds. A requirement for assistance is that the person must be "needy" after all his income and resources have been taken into consideration. The Act, however, leaves the definition of "need" to each state. Each county within a state may establish its own standards (9).

#### Factors Influencing Food Habits and Intake

Food habits are an integral part of the cultural setting, and a knowledge of their relationship to the total life pattern is an area that needs clarification and delineation according to Fox (10). A good acceptance of food is associated with the sensation created. Pilgrim (11) stated that food habit formation is an interrelationship between the influences of

physiology and attitudes. Mead (12) indicated that the dietary pattern of the individual depends upon physiological, sensory, educational, economic, and cultural factors.

We are now aware that there is hunger, malnutrition, and sometimes virtual starvation in our country. Malnutrition, as defined by Stare (13), means ill health due to poor or inadequate nutrition. Growing evidence that nutrition may affect intellectual and behavioral growth has stimulated efforts to determine the extent of malnutrition and to assess its long term impact, according to Read (14).

The early years of childhood and adolescence are periods of rapid growth. The demand for several nutrients is higher then than at any other time in life. Food patterns become food habits and the foundation of nutritional status is established during those years, Mayer (15) observed.

Surveys are described which indicate a link between early childhood malnutrition and mental development among the poor in the United States (14). Undernourished or hungry children exhibit behavioral alterations including apathy, lethargy, inability to pay attention and perhaps such over-concern about food that responses to classroom stimuli do not occur (15).

There are several other groups in our population whose health may be impaired if they are improperly fed. Nutritional stress in the pregnant woman may result in retarded fetal growth (15).

We live in a culture where the aging, especially the poor, are often isolated and forgotten. There needs to be methods of

making attractive and palatable foods available to the aged in a social situation which alleviates the elderly person's isolation and loneliness (15).

Degenerative diseases are known to be caused or aggravated by improperly balanced diets. A diet high in saturated fats has casual implications in cardiovascular diseases. The rising consumption of refined carbohydrates has greatly aggravated the incidence of dental caries (15).

Obesity is another health hazard (15). Gaylor (16) stated that obesity is a generalized weight excess due to the accumulation of fat beyond the 10 to 20 per cent of normal range for age, sex, and height. The high incidence of obesity or overweight in this country is due both to increased food intake and decreased activity. Failure to engage in sufficient physical exercise is considered an important factor contributing to an overweight condition in today's society. Obese individuals are more susceptible than persons of normal weight to diabetes, hypertension, angina, sudden death, gall bladder disease, arthritis, pulmonary dysfunction, and mortality from surgical procedures (16).

Extreme underweight or "hidden hunger" also is of concern. The individual has such low tissue nutrient levels that if he is subjected to continued inadequate diet or additional stress, his performance is reduced and eventually malnutrition appears (17).

Nutritional needs for the aged are modified to some extent. The aged generally have a decline in metabolic rate so that

their caloric need is reduced, they have less tolerance to sugar, common iron deficiency, common vitamin deficiencies in thiamine and ascorbic acid but have as great calcium requirement as that of the young, according to Esposito, et al. (18).

Many Americans today are quite ignorant about the most elementary principles of applied nutrition. This ignorance makes the middle and upper classes ideal targets for food faddists and the poor suffer because their limited food budget allows them little room for mistakes. Knowing the difficulty of changing food habits, the problems of improving the general nutrition education of the public is of great importance in a national nutrition scheme (15).

Clark and Fincher (19) found that the adequacy of family diets at similar income levels was influenced by the level of education. Homemakers with a high school education were found to have better nutritional practices than those with less education. Those who had attended college had more adequate diets than those with less education.

Economic factors are thought by some to influence the food habits. Young et al. (20) noted that increased income level resulted in more adequate quantity and quality of foods consumed. The diet of high-income families contained larger amounts of nearly all nutrients than did the diets of low-income families in a study of city families by Clark (21).

Hochstim et al. (22) conducted a study considering the interaction among income, race, and residence on one hand and indicators of sickness, deprivation, and social inability on

the other. They found people with adequate incomes have better health and health care, better jobs, more education, and more stable marriages; but even at the same income level, poverty-area residents have more problems than those outside the area. Large proportions of poverty-area residents at all income levels displayed a sense of isolation.

Low-income families generally pay more for food than those in non-poverty areas which causes a great problem. The quality of foods available to poverty-area residents was also reported to be poor by Captain and McIntire (23). Poor storage and handling practices prevent the low-income consumer from receiving maximum food benefits.

Differences in food habits depend somewhat upon geographical location as indicated in the Household Food Consumption Survey 1965-66 (24). Preferred foods as listed in the survey and used in the North Central region, of which Kansas is a part, included fresh whole milk, cheese, butter, beef, pork, lunch meat, fresh white potatoes, commercially canned and frozen fruit. Several changes in food consumption between the 1965 and 1955 surveys were reflected. There was increased use of bakery products and meat, fish and poultry in the 1965 survey, but decreased use of milk and milk products, flour and cereals, and vegetables and fruits. Other changes were found: shifts to new foods, use of more quickly prepared convenience foods, a response to new knowledge about the relation of diet to health--specifically calories and fats, a trend to more frequent eating through snacking, and a blending of food habits due to greater mobility of the population.



## Methods of Assessing Nutritional Level of Adults

Dietary Study. The dietary study is made to give a pattern of food intake and its relationship to the physical state. Becker, Indik, and Beeuwkes (25) list numerous methods which have been developed for gathering food consumption data. A survey estimate and a controlled dietary study are the two basic methods.

The survey estimate uses several different techniques, one of which is the 24-hour recall of food consumed, obtained by an interview. An analysis of the data gathered may be made comparing food intake to basic food groups or tabulating nutrient content from food composition tables (26).

Since 1943 the Food and Nutrition Board of the National Research Council has studied and made judgments regarding the daily nutritional intake of nutrients adequate for maintenance of good nutrition. These judgments have been published as the "Recommended Dietary Allowances," commonly referred to as RDA. The RDA serves as a guide in planning or analyzing diets and is designed to give a margin of safety. The RDA is revised periodically with the last revision occurring in 1968 (27).

Interpretation of an Adequate Diet. One method of determining the adequacy of a diet is to use a daily food plan known as the "Basic Four Food Groups." The four principal groups are recommended with minimum servings of each listed as the foundation of a good diet to provide good nutrition. This daily food plan often called the "Basic Four" was interpreted from RDA by the Institute of Home Economics, USDA (28).

Body Measurements. The body is made up primarily of bone, muscle, and fat. In order to make an accurate or useful estimate of body weight the proportion of each must be known. Tables of height-weight according to frame are available from Metropolitan Insurance Company (29). Skinfold thickness, an anthropometric measurement, is widely used to determine the amount of fatty tissue present. The standard pressure skinfold caliper apparatus makes possible accurate and reproducible measurements of subcutaneous fat layers. Calipers designed by Best (30), Harpenden (31), and Lange (32) are widely used. They are designed to exert a pressure of 10 gm/mm on a contact surface of 20-40 mm<sup>2</sup> (32).

The site of body measurement for study depends on such criteria as accessibility and accuracy with which one can locate and reproduce the site (32, 33). In general, researchers favor the triceps skinfold thickness because the upper arm site is easily accessible. The triceps skinfold is located at the back of the arm midway between the acromion and the tip of the elbow. The measurement is taken when the arm is flexed at approximately 90° angle (32).

## PROCEDURE

### Sample

The sample consisted of families receiving welfare living in three Kansas counties and maintaining themselves in their own homes. The counties were adjacent to each other and each offered a different type of welfare program--commodity, food stamp, or public assistance. Each county had rural farming and ranching areas with a few small towns sprinkled throughout. The largest town in each was the county seat. The population within the counties was generally similar in background and culture.

The random sample drawn from cases listed in three counties, each having a different welfare program, consisted of 20% of total recipients subsisting on each of the following four plans: (a) Plan I had 20 respondents on the Commodity Distribution Program, (b) Plan II had 23 respondents on the Food Stamp Program, (c) Plan III had 18 respondents on the Food Stamp Program but who chose not to use the stamps, (Plans II and III were within the same county), and (d) Plan IV had 20 respondents on the Public Assistance Program.

### Order of Procedure

Cooperation of the Director of the State Department of Social Welfare, Regional Field Representatives, and Directors of each County Welfare Department involved was obtained. An interview with each County Director to make specific

arrangements for the survey within that county was scheduled. Each individual to be interviewed was assured by letter (Letter 1, Appendix) that information would be confidential. Cases for the sample were selected by use of random number. Letters were sent by the director asking cooperation of each recipient (Letter 2, Appendix). The desired data were obtained through personal interview using a questionnaire (Form 1, Appendix).

### Interview

A letter of introduction from the Foods and Nutrition Department of Kansas State University was given the respondent by the researcher upon arrival. Respondents were asked if it were convenient to interview at that time and most persons agreed. The questionnaire was explained, then the questions were asked with the interviewer recording the answers. Each interview took about one hour. At the close of the interview the respondent was given a Basic Four Food Guide furnished by the Dairy Council (Form 2, Appendix). If the individual's diet had been quite bad, a simple explanation was given as to what foods were needed and how they might help. Appreciation to each person interviewed was expressed upon leaving. Later, an observation was made concerning the individual's physical appearance and any notes concerning the interview needed at a later time.

### Observation of Dispensing Commodities and Food Stamps

The method of dispensing commodities was observed. The commodity foods were kept in refrigerated vermin- and rodent-proof storage centers. A central location was available monthly for dispensing the foods. The participant receiving commodities was identified by a card, asked if the item to which he was entitled was desired, and was requested to sign the pre-prepared card. He then took his container to the table and was given the desired items to which he was entitled.

Food Stamps were dispensed in much the way that a check is cashed at a bank. The participant showed his identification card, paid his money for the stamps, then signed that the amount designated had been paid and the food stamp coupons were issued.

### Methods of Measurement

The personal interview was conducted to gather data concerning food choices, frequency of use of foods, a 24-hour dietary recall, personal data, and general information pertaining to any or all of those items. Height, weight and skinfold measurements were taken for the female respondents.

Dietary Recall. The 24-hour dietary recall was a record of all the foods and beverages eaten by the respondent for the 24 hours previous to the interview. Amounts of each food were recorded. Snacks were recorded separately.

The allowances for the "Basic Four Food Groups" served as a guide in evaluating the daily diet. The "Basic Four" listed

daily requirements of the 4 food groups to be used with other foods to complete meals and provide additional energy as needed for growth, activity, and desirable weight (Form 2, Appendix).

Height. Height was measured by having the respondent, with shoes on, stand straight against the wall. A steel tape with head level bar was used to measure the height to the nearest one-fourth inch.

Weight. The respondent wore indoor clothing and shoes and was weighed on certified scales. Weight was recorded to the nearest pound. Calculations using the Metropolitan table were made to determine the percentage underweight or overweight for female respondents (tables 7 through 10, Appendix).

Skinfold Measurement. Skinfold thickness was measured using the Lange calipers. The site of measurement was the dorsal midpoint between the elbow and bony prominence of the scapula of the shoulder joint. A dorsal skinfold of the upper arm was grasped between the thumb and forefinger one cm above the site of measurement; the jaws of the calipers were placed parallel to the free skinfold pad. Measurements were recorded to the nearest millimeter reading.

#### Analyses of Data

The experimental design used for the study was least-squares analysis of variance with unequal subclass numbers.

Data for the evaluation of food intake were subjected to the following analysis of variance:

<u>Source of Variation</u>	<u>D/F</u>
Plan of assistance	3
Level of income	2
Age of respondent	1
Household group size	3
Educational level of respondent	1
Residual	68
Total	78

Data for the evaluation of height-weight classification were subjected to the following analysis of variance:

<u>Source of Variation</u>	<u>D/F</u>
Plan of assistance	3
Level of income	2
Age of respondent	1
Household group size	3
Educational level of respondent	1
Residual	55
Total	65

Data for the evaluation of skinfold thickness were subjected to the following analysis of variance:

<u>Source of Variation</u>	<u>D/F</u>
Plan of assistance	3
Level of income	2
Age of respondent	1
Household group size	3
Educational level of respondent	1
Residual	53
Total	63

## RESULTS AND DISCUSSION

Respondents who participated in this survey were on three welfare programs: (a) Commodity Distribution, (b) Food Stamp, and (c) Public Assistance. In the county which used the Food Stamp Program there were many who did not choose to use the available stamps. These respondents were designated as a separate group in the study. Throughout the discussion the Commodity Program with 20 respondents will be referred to as Plan I, the Food Stamp Program with 23 respondents as Plan II, Food Stamp Program with stamps available but not chosen with 18 respondents as Plan III, and the Public Assistance Program as Plan IV.

In this study information obtained from the respondents was considered representative of the household group diet. The 24-hour dietary intake was evaluated using the Basic Four food groups. Values for the adjusted means (%) and significance appear in Tables 1, 2, 3, 4, 5, 6. General information about the respondents is included for understanding of food and culture.

Generally the respondents on the different plans indicated that they were content with the type of program in which they participated. Those on Plan I liked the plan very well. They liked being able to accept or reject the foods offered. Most expressed the idea that they did not know how they could get along without commodities. Some wished there would be more canned fruit, canned meat or chicken, and sugar included in the commodities. Since so many respondents in this group did some



canning or freezing (table 11, Appendix), it is easily understood the reason for wanting sugar.

Those respondents on Plan II were enthusiastic about their plan. They believed that it gave additional buying power, they could purchase the foods they wanted, and it was a wonderful help. Few of this group had any complaints about the plan except the natural feeling of wishing that the money (or coupons) would buy more food.

The respondents on Plan III within the same county as those on Plan II, seemed to feel that the food stamps were too much trouble. Some expressed the feeling that they were embarrassed by the stamps, some complained they could not buy what they wanted, some said the food store wouldn't take the stamps, and some even said they could not eat all the food that the coupons would buy and they needed the money spent for coupons for other things.

The respondents on Plan IV had few ideas about the plans. Three individuals expressed the idea that they would like either a Food Stamp or Commodity plan. Others were not interested or were not aware of the advantages in having more food available.

Sixty-five per cent of the respondents on Plan I had gardens, a much higher percentage than on the other plans (table 11, Appendix). Fifty per cent of respondents on Plan I also processed food products. This helped to meet their vegetable and fruit intake.

Few of the respondents were interested in attending any type of classes to learn more about nutrition or homemaking skills (table 12, Appendix). This may be a result of an older, less energetic group of individuals or it may be the result of apathy which may accompany poor nutrition.

The greatest percentage of the respondents were women alone, generally elderly widows or elderly women whose husbands were ill and in rest homes (table 13, Appendix). The men living alone were bachelors with no family, widowers, or had a wife in ill health staying in a rest home. Obtaining proper nutrition was difficult for some of this group. Some depending upon the local restaurant for their hot meal of the day ate cold foods for the other meals. When the only local restaurant closed, as in one small town, these respondents were in very difficult circumstances, with no refrigerators, no running water, and no cabinets for food storage.

The respondent's self-evaluation of health was recorded (table 14, Appendix). The greatest complaint of ill health was nerves. Many of the 45-65 age group were individuals whose health was poor.

Many of the respondents or members of their families were on special diets. Some diets were self-imposed, others prescribed by a physician. These included low-fiber, salt-free, low-fat, low-sugar, low-acid, and low-starch diets. Seventeen respondents were on a weight reduction diet upon the advice of their physician.

Respondents in Plan I, in the area surveyed, were not

forced to take food items which they could not use. If a diet prescribed by a physician required special foods, there would be monetary help given sometimes by the Welfare Department to aid the respondent in obtaining proper food.

Snacks were never eaten by many respondents, yet a very low percentage did snack occasionally. Ice cream was a popular snack food. Soft drinks were not used excessively (table 15, Appendix).

Respondents on Plan I, usually met more of their food intake than those on any other plan of assistance. However, there were no significant differences found in food intake attributable to plan (table 1).

Monthly payments to the respondents on Plan I ranged between \$75 and \$200, on Plan II between \$32 and \$400, on Plan III between \$70 and \$300, and on Plan IV between \$50 and \$400.

The respondents on Plan I (table 16, Appendix) receiving monthly payments of \$151 or over more nearly met their total nutritional needs with 33% of respondents meeting over half of the total nutritional needs and 67% of the respondents meeting two-thirds and over of nutritional needs.

On Plan III (at the \$101-150 level) half the respondents were able to meet 66% or more of the total nutritional needs, while the other half of respondents met less than 50% of total nutritional needs. On Plan II only 30% of respondents (\$101-150 level) met at least 66% of total nutritional needs and

TABLE 1

Adjusted means (%) and significance levels for food intake of respondents on each plan of assistance<sup>1</sup>

Food intake	Adjusted means for plan				Significance level
	I	II	III	IV	
	%	%	%	%	
Total intake	64.1	59.1	58.5	59.9	.64
Milk group	62.0	56.5	55.1	40.9	.47
Vegetable-fruit group	54.6	53.0	53.2	54.9	.99
Bread-cereal group	83.4	88.7	87.6	80.5	.91
Meat group	71.2	63.8	65.9	72.5	.67
Water	65.3	62.1	62.3	71.6	.47

<sup>1</sup>Plan of assistance: I Commodity Distribution

II Food Stamp

III Food Stamps not chosen

IV Public Assistance

only 37% of Plan IV respondents at the same income level met 66% or more of the total nutritional needs.

Money alone does not seem to be the single determinant in getting the proper nutrition. It was evident that some respondents did well nutritionally regardless of level of income while others were not able to do so well. However, those on the middle income level of \$100-150/month appeared to have a slight advantage (table 2).

No significant differences were noted in any food intake of respondents attributable to level of income except within the milk group (table 2). Highly significant differences in intake of the milk group were noted between respondents of income levels 1 and 2, and between income levels 2 and 3. No significant difference was noted between income levels 1 and 3 (table 2).

There were no significant differences in food intake of respondents attributable to household group size (table 3). However, it was noted that household group size 4, with six or more people, met more of their nutritional requirements than groups of other sizes. This seems logical since large families with children usually take more interest in preparing food than those with one, two or three people. It was interesting to note that group size 4 consistently met a higher percentage of their nutritional needs than any other.

TABLE 2

Adjusted means (%) and significance for food intake of respondents attributable to level of income<sup>1</sup>

Food intake	Adjusted means for food intake of each level of income			Significance level
	1	2	3	
	%	%	%	
Total intake	59.2	64.7	57.3	.26
Milk group	45.7 *	76.8 *	38.5	.01*
Vegetable-fruit group	55.0	54.5	52.2	.96
Bread-cereal group	92.6	92.4	70.2	.38
Meat group	63.9	65.2	75.9	.52
Water	66.4	63.3	66.2	.84

<sup>1</sup>Level of income: 1. Less than \$100/month  
 2. \$100-150/month  
 3. \$151 and over/month

\*Significant at the 5% level

TABLE 3

Adjusted means (%) and significance levels for food intake of respondents attributable to household-group size<sup>1</sup>

Food intake	Adjusted means for food intake of household-group size				Significance level
	1	2	3	4	
	%	%	%	%	
Total intake	53.2	53.5	63.3	71.6	.14
Milk group	41.9	33.1	56.9	82.5	.33
Vegetable-fruit group	43.9	48.6	61.1	62.1	.36
Bread-cereal group	74.1	72.5	95.5	96.2	.55
Meat group	66.9	66.0	64.6	76.0	.92
Water	62.3	57.1	61.7	80.2	.42

<sup>1</sup>Household group size: 1. Single individual

2. Two people

3. Three to five people

4. Six or more people

The age of respondents on Plan I ranged between 24 and 87 years, on Plan II between 37 and 89, on Plan III between 19 and 94, and on Plan IV between 30 and 89.

On Plan I, 73.1% of the respondents were over 66 years of age (table 17, Appendix). These respondents were in a county that had more older people than any other within the state according to community statistics.

The differences in food intake attributable to age or educational level of respondents were nonsignificant (tables 4, 5). Education for most of the respondents on each plan of assistance was between 4th and 8th grade levels (table 18, Appendix).

Usually the more education one has the higher the income. In most cases, this was true in this survey (table 19, Appendix).

Two glasses of milk or equivalent are considered the minimum daily amount needed by adults (considered 100% of requirements in this study). Only a few respondents on each plan consumed this amount (table 20, Appendix). Failure to use any milk or less than half the daily minimum requirement may reflect the assumption by many that milk is not needed by adults.

Respondents on Plan I used less fresh milk but two or three times more non-fat dry milk than respondents on the other programs. They also used more evaporated milk. This might be expected since both non-fat dry and evaporated milk was provided (table 21, Appendix).



TABLE 4

Adjusted means (%) and significance levels for food intake of respondents attributable to age group<sup>1</sup>

Food intake	Adjusted means for age group		Significance level
	1	2	
	%	%	
Total intake	59.7	61.1	.74
Milk group	54.2	53.1	.92
Vegetable-fruit group	52.2	55.6	.64
Bread-cereal group	85.3	84.8	.96
Meat group	69.0	67.7	.85
Water	69.0	61.7	.23

<sup>1</sup>Age group: 1. 65 years or less

2. Over 65

TABLE 5

Adjusted means (%) and significance levels for food intake of respondents attributable to level of education<sup>1</sup>

Food intake	Adjusted means for level of education		Significance level
	1	2	
	%	%	
Total food intake	59.1	61.7	.51
Milk group	50.0	57.3	.54
Vegetable-fruit group	51.0	56.8	.40
Bread-cereal group	82.1	88.0	.59
Meat group	70.2	66.5	.60
Water	65.3	65.3	.99

<sup>1</sup>Level of education: 1. 8th grade or less

2. 9th grade and over

Four or more servings of the vegetable-fruit group are considered the minimum daily amount needed by adults. No respondent consumed the required amounts, although a few had three-fourths or more of the daily needs (table 22, Appendix). When considering the consumption of the vegetable-fruit group, the interviewer observed that many of the households in the survey area had vegetable gardens. This might help explain the fact that respondents on all plans consumed about the same per cent of the vegetable-fruit group.

None of the respondents on any plan of assistance met the daily requirement of four servings of the vegetable-fruit group (table 23, Appendix).

One serving of the vegetable-fruit group consumed each day should be from foods rich in ascorbic acid, whereas one serving every other day should be a dark green or deep yellow vegetable rich in vitamin A. Tables 24 and 25 (Appendix) show the percentage of the vegetables and fruits consumed occasionally or never by respondents. Respondents on Plans II, III, and IV used more foods that are rich sources of vitamins A and C than respondents in Plan I (table 26, Appendix).

Four or more servings of enriched or whole grain breads and cereals are the recommended minimum daily intake. There was little variation among respondents on various plans in the percentage of bread-cereal group consumed (table 27, Appendix). The number of servings of the bread-cereal group consumed daily was more nearly met than any other by respondents on each plan (table 28, Appendix).

More cooked cereal products were used by respondents on Plan I, which provided rice, bulgar, and rolled oats. Rice was used by the respondents on Plan I more often than by those on Plan II or Plan IV. On Plan III only 39% of the respondents used rice occasionally and 61% never used it (table 29, Appendix). Plan III had the lowest percentage of respondents using either dry prepared or cooked cereals (table 30, Appendix).

Respondents on Plans I and III prepared baked products slightly more often than those on Plans II and IV (table 31, Appendix). Since whole wheat and all purpose flour and lard were among the food items supplied, it would be expected that more Plan I respondents might bake products.

Two or more servings of the meat group are suggested for inclusion in the daily diet. This group includes meat, fish, poultry, eggs, or cheese, with dry beans, peas, nuts as alternates. Respondents on Plans I and IV met 75% or more of the meat group requirement, with respondents on Plans II and III reaching almost the same level. Plan II had 9% respondents consuming no meat, while Plans I, III, and IV each had 5 to 6% respondents consuming no meat (table 32, Appendix).

Beef and chicken generally were the meats chosen most often by the respondents. Pork, especially bacon, was used frequently. Fish was used occasionally. There were no respondents using lamb, which is seldom available in the markets of the area surveyed.

In table 33, Appendix, it can be seen that certain other foods within the meat group were used. Since cheese, dry beans,

and peanut butter were commodity items, it was noted that a high percentage of these products were used by the respondents on Plan I.

Eight glasses of water is considered the minimum requirement for the daily amount needed by adults. Water intake was supplemented by other fluids consumed, that is, tea, coffee, soft drinks, etc. Liquid intake generally was adequate for respondents on all plans (table 34, Appendix). Total coffee consumed by all groups was similar in amount. Tea was used only about one-half as often as coffee.

Measurements of height and weight were used in classifying the female respondents as underweight, normal weight, or overweight. More respondents were overweight than either underweight or normal weight (tables 7, 8, 9, 10).

There was a significant difference in percentage overweight attributable to age of respondent (table 6). The respondents of 65 years or less were significantly more overweight than the other group. The same trend was observed for skinfold measurements. Respondents of 65 years or less had an adjusted mean value of 33.0 mm for skinfold thickness which was significantly greater, at the 1% level, than 18.7 mm of the second age group (table 6). Since the normal range of skinfold is from 16 to 21 mm according to Donelson (36), the mean for the second age group was within the normal range. There were no differences in overweight or skinfold thickness attributable to plan of assistance, level of income, household group size or

education. The only respondents within the normal skinfold thickness range were those in household group size 3.

TABLE 6

Adjusted means (%) and significance of overweight and skinfold thickness attributable to plan of assistance, level of income, age of respondent, household group size, and educational level of respondent

Factor	Over-weight	Signif-icance level	Skinfold thickness	Signif-icance level
	%		mm	
Plan of assistance		.13		.05
I	7.6		21.3	
II	24.7		31.6	
III	11.8		24.7	
IV	13.5		25.9	
Level of income		.75		.32
1. Less \$100/month	15.5		24.3	
2. \$100-150/month	15.4		23.3	
3. \$151 and over	12.4		30.3	
Age of respondent		.03*		.00+**
1. 65 or less	22.4		33.0	
2. Over 65	6.4		18.7	
Household group size		.73		.19
1. Single individual	21.0		31.0	
2. Two people	16.0		25.6	
3. Three to five people	13.4		21.0	
4. Six or more	7.2		25.9	

TABLE 6, cont'd

Factor	Over-weight	Significance level	Skinfold thickness	Significance level
	%		mm	
Education level of respondent		.55		.66
1. 8th grade or less	12.5		25.2	
2. 9th grade or more	16.3		26.6	

\*Significant at the 5% level

\*\*Significant at the 1% level



## SUMMARY

This study was designed to survey and evaluate the food intake of respondents from low-income household groups on four plans of three basic welfare programs: Plan I, Commodity Distribution; Plan II, Food Stamps; Plan III, Food Stamps available but not chosen to be used; and Plan IV, Public Assistance.

The 24-hour dietary recall indicated that the respondents did not meet the required Basic Four food groups. No significant differences were found in the recommended daily food intake of respondents attributable to plan of assistance, household group size, age, or level of education. Generally, however, respondents on Plan I consumed a higher per cent of the total recommended daily intake than respondents on any other plan.

A slightly better total food intake was reported by respondents in the middle level of income than for respondents at other income levels. Highly significant differences in intake of the milk group were noted between respondents of income levels 1 and 2, and between those of income levels 2 and 3. No significant difference was noted between respondents on income levels 1 and 3. Households with six or more individuals had the best daily food intake. Age seemed to have little effect on recommended daily intake. Respondents with the highest educational level more nearly met the food allowance than those of lesser educational level.

Respondents on Plan II were the most overweight, whereas those on Plan I maintained a more normal weight although differences in the percentage mean values were not significant. Respondents of age 65 or less were significantly more overweight than those over 65. On the average, respondents living alone were more overweight than those living in larger household groups.

There were highly significant differences in skinfold thickness measurements. The skinfold measurements for the younger group of 65 years or less was greater than for those of the other group.

## ACKNOWLEDGMENTS

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## APPENDIX



## Letter 1

Foods and Nutrition Dept.  
College of Home Economics  
Kansas State University  
Manhattan, Kansas  
June 16, 1969

To:

\_\_\_\_\_, Director of Social Welfare  
\_\_\_\_\_, County, Kansas

From:

Eena J. Adams

Pertaining to:

Coding of respondents to be used for Master's Thesis in  
Foods and Nutrition.

Tentative title of proposed investigation:

A nutritional survey of selected Kansas family groups on  
different welfare assistance programs.

Brief statement of problem to be investigated:

A comparison of selected low income family groups on three types  
of assistance programs: General Welfare Assistance with Com-  
modities, General Welfare Assistance with Food Stamps, and  
General Welfare Assistance.

A comparison of nutritional level of the respondents as  
affected by the type of assistance; income; living group size;  
age; education; and health as indicated by weight, height, and  
skinfold measurements.

Method for maintaining confidentiality:

A list containing case names will be coded by number for use  
in the study. This list will include addresses for location  
of cases and will be available to no one except the researcher  
and the advisor. Once each case is assigned a code number,  
any information to be recorded will be listed with only that  
code.

## Letter 2

Courthouse  
County, Kansas  
Summer, 1969

Mr. \_\_\_\_\_  
City \_\_\_\_\_, Kansas

Dear \_\_\_\_\_:

Mrs. Eena J. Adams is in our county doing a study of the foods which people eat and how they influence the health of the family.

There are no right or wrong answers to the questions she will ask. She is merely interested in what foods people do eat, whether they are on any special diets, and what they think about foods. Mrs. Adams will come to your home within a few weeks. It will only take a little of your time.

We think her study is of value. We hope you will be willing to participate in the study.

If you have any questions concerning Mrs. Adams or are not willing to have her contact you, will you please call us or send the bottom section of the letter. If we do not hear from you we will assume that you will be willing to take a few minutes of your time to help her with her study.

Sincerely,

Director of Social Welfare

---

Director of Social Welfare  
County, Kansas

I do not wish to participate in the study that Mrs. Adams is doing with foods.

Signed \_\_\_\_\_

Date \_\_\_\_\_

Summer, 1969

Dear Homemaker:

This letter is to introduce Eena J. Adams, a member of our group, conducting a research study in the Department of Foods and Nutrition, at Kansas State University. We are interested in the nutritional level of families of this county.

As a homemaker, your opinion is important to us. The questions we will ask have no right or wrong answers but they tell us about the foods frequently eaten. We hope you will help us by answering these questions.

Thank you for your time and all courtesy extended.

Sincerely yours,

Gwendolyn L. Tinklin  
Professor, in charge  
of research study

Lucille M. Wakefield  
Head of Department

Form I

QUESTIONNAIRE

	Occasionally	Not at all	Always	DAILY			WEEKLY							
				1x	2x	3x	1x	2x	3x	4x	5x	6x		
What do you drink with your meals?														
Coffee														
Tea														
Coke														
Milk														
Water														
Is milk included? How often?														
Do you use milk as fresh?														
powdered?														
canned?														
How often do you use eggs?														
How often do you have meat?														
How often do you have beef or veal?														
pork?														
lamb?														
chicken?														
fish?														
Do you use dried beans or dried peas?														
Does the family use cheeses?														
Does the family use peanut butter?														
Does the family use cereals? Cooked?														
Dry prepared?														

## Form I (cont'd)

## QUESTIONNAIRE

	Occasionally	Not at all	Always	DAILY			WEEKLY							
				1x	2x	3x	1x	2x	3x	4x	5x	6x		
✓ How often do you use bread?														
Do you bake breads? Loaf?														
Biscuits?														
Cookies?														
Cakes?														
Cornbread?														
What kind of bread do you use? White?														
Whole wheat?														
Cracked wheat?														
Rye?														
✓ Do you cook rice?														
How many times a day do you have vegetables?														
Which vegetables do you have most often?														
✓ Asparagus														
Beets														
✓ Broccoli														
✓ Cabbage														
✓ Carrots														
✓ Cauliflower														
✓ Celery														
✓ Corn														
✓ Cucumbers														
✓ Green beans														
✓ Lettuce														
✓ Lima beans														

## Form I (cont'd)

## QUESTIONNAIRE

	Occasionally	Not at all	Always	DAILY			WEEKLY							
				1x	2x	3x	1x	2x	3x	4x	5x	6x		
Onions														
Peas														
Peppers, green														
Potatoes														
Pumpkin, squash														
Spinach, kale, greens														
Sweet potatoes														
Tomatoes														
Turnips														
Which fruits do you have most often?														
Apples														
Apricots														
Bananas														
Berries														
Cherries														
Grapefruit														
Grapes														
Lemons, limes														
Melons-watermelon, cantaloupe														
Oranges or juice														
Peaches														
Pears														
Pineapple														
Plums														
Prunes														
Raisins														
Rhubarb														

24-Hour Dietary Recall (28).

Points	20	35	15	25	5
Meal	Milk Group 1 gl. = 10 1 1/2 gl. = 15 2 gl. = 20	Vegetable - Fruit Group 1x = 5      1 x = 5 2x = 10     2 x = 10 3x = 15  Citrus Potato incl or above        Raw tomato Dk. green Can tomato = + 5        = + 5	Bread-Cereal Group Dk., whole grain enrich., restored  2 x either = 10 4 x either = 15	Meat Group Eggs, Meat, Cheese, Poultry, Dr. Beans, Dr. Peas, Nuts  1 x = 10 2 x = 20 Liver or Kidney = +5	Water Total Liquids Coffee, Tea, etc.  6 gl. = 2 1/2 6 gl. = 5
TOTALS					

gl. glass  
x servings  
dk. dark





## Form I (cont'd)

What foods, if any, do you limit in the diet you eat?

FOODS LIMITED

REASON

Are you on a special diet now? YES \_\_\_\_\_ NO \_\_\_\_\_  
 TYPE \_\_\_\_\_

If YES, why are you on a diet?

\_\_\_\_\_ for weight reduction (own prescription)  
 \_\_\_\_\_ for weight reduction (doctor's prescription)  
 \_\_\_\_\_ for gaining weight  
 \_\_\_\_\_ for other reasons, specify \_\_\_\_\_

How often/wk do you snack on the following:

Meat	0	1	2	3	4	5	6	7
Cheese	0	1	2	3	4	5	6	7
Candy	0	1	2	3	4	5	6	7
Soft drinks	0	1	2	3	4	5	6	7
Coffee, tea	0	1	2	3	4	5	6	7
Doughnuts, sweet rolls	0	1	2	3	4	5	6	7
Cookies, cake, pie	0	1	2	3	4	5	6	7
Fruit, fruit juices	0	1	2	3	4	5	6	7
Milk, milk beverages	0	1	2	3	4	5	6	7
Potato chips, fritoes	0	1	2	3	4	5	6	7
Peanuts, other nuts	0	1	2	3	4	5	6	7
Ice cream	0	1	2	3	4	5	6	7
Crackers	0	1	2	3	4	5	6	7
Crackers with spread	0	1	2	3	4	5	6	7
Sandwiches	0	1	2	3	4	5	6	7

## Form I (Concl'd)

	YES	NO	MAYBE
Have you attended any afternoon or evening classes for study? _____			
Would you like classes to help you know more about food and how to prepare it? _____			
Do you ever have a garden? _____			
Do you ever can or freeze foods from the garden? _____			
Do you have a refrigerator with a freezing compartment? _____			
Do you like the Commodity and/or Food Stamp program? _____			
Why? _____			
Is there something you wish were available on the Commodity or Food Stamp program? _____			

Self Assessment of Health and Physical  
Measurements for Female Respondent

Self assessment of health	Very good	Good	Fair	Poor	Very poor
<u>Appetite</u>					
<u>Nerves</u>					
<u>Sleep</u>					
<u>Energy</u>					
<u>Your state of health</u>					

Physical measurements determined by interviewer for female respondents

Height \_\_\_\_\_ Weight \_\_\_\_\_

Skinfold thickness \_\_\_\_\_

## Form 2

Copy of "Basic 4 Food Guide" furnished by the Dairy Council

A GUIDE TO GOOD EATING

Use Daily:

Milk group

2 or more servings for adults  
Cheese, ice cream and other milk-made foods can  
supply part of the milk.

Meat group

2 or more servings  
Meat, fish, poultry, eggs or cheese--with dry beans.  
peas, nuts as alternates.

Vegetable-fruit group

4 or more servings  
Include: (1) dark green or yellow vegetables at  
least every other day  
(2) citrus fruit or other fruits or vege-  
tables rich in ascorbic acid (vitamin C)  
daily  
(3) other fruits and vegetables including  
potatoes.

Bread-cereal group

4 or more servings  
Enriched, whole grain, or restored.

This is the foundation for a good diet. Use more of  
these and other foods as needed for growth, for activity,  
and for desirable weight.

TABLE 7

Height, weight, skinfold thickness, and % under or overweight for female respondents attributable to plan of assistance

## Plan I

Female respondents	Height	Weight	Skinfold	Weight	
				Under	Over
	in	lbs	mm	%	%
1	59 1/2	126	12.5	-	3.3
2	59 1/4	132	25	-	9.1
3	61 1/2	134	15.5	-	3.1
4	60 1/2	123	12	-	-
5	61 3/4	93	12	3.1	-
6	63 3/4	135	19	-	-
7	64	116	6 1/2	-	-
8	66 1/2	162	34	-	7.3
9	64	105	13	-	-
10	61 1/2	129	21 1/2	-	-
11	62 1/2	97	12	-	-
12	58	96	15	-	-
13	64 1/2	91	6	-	10.8
14	59 1/2	140	14	-	15.7
15	63 1/2	171	20	-	25.7
16	61	162	36	-	26.6

TABLE 8

Height, weight, skinfold thickness, and % under or over-weight for female respondents attributable to plan of assistance

## Plan II

Female respondents	Height	Weight	Skinfold	Weight	
				Under	Over
	in	lbs	mm	%	%
1	66	195	52	-	30.9
2	58 1/2	80	6	-	7.0
3	51	110	12	-	10.0
4	60 1/2	187	30	-	48.4
5	62	110	23	-	-
6	61 1/4	208	43	-	62.5
7	60	255	64	-	105.6
8	62	95	14	-	1.0
9	60	160	40	-	29.0
10	61 1/2	90	13	-	5.3
11	60 1/2	182	42	-	44.4
12	60 1/2	102	12	-	-
13	62 1/4	207	50	-	58.0
14	64 1/2	178	20	-	26.2
15	63	126	28	-	-
16	64 3/4	150	21	-	14.8
17	59 1/4	161	51	-	33.0
18	66	212	35	-	42.3

TABLE 9

Height, weight, skinfold thickness, and % under or overweight for female respondents attributable to plan of assistance

## Plan III

Female respondents	Height	Weight	Skinfold	Weight	
				Under	Over
	in	lbs	mm	%	%
1	64 1/4	175	33	-	25.9
2	62	159	34	-	21.4
3	61	114	25	-	-
4	62 1/2	174	38	-	31.8
5	61	115 1/2	26	-	-
6	60	172	40	-	38.7
7	65 1/8	166	33	-	16.1
8	62 1/4	131	12	-	-
9	58	106	13	-	-
10	60	208	27	-	67.7
11	61 1/4	119	14	-	-
12	64 1/4	115	-	-	-
13	63 1/8	127	30	-	-
14	64	128	20	-	-
15	65 3/4	212	43	-	42.3
16	61 3/4	86	4	10.4	-

TABLE 10

Height, weight, skinfold thickness, and % under or over-weight for female respondents attributable to plan of assistance

## Plan IV

Female respondent	Height	Weight	Skinfold	Weight	
				Under	Over
	in	lbs	mm	%	%
1	55	149	19	-	48.6
2	60 1/2	112	10	-	-
3	64	111	8	-	-
4	61 1/2	165	19	-	26.9
5	66 1/4	158	26	-	6.0
6	60	133	22	-	7.2
7	57 1/2	117	22	-	-
8	62 1/2	134	28	-	1.5
9	63 1/2	205	48	-	50.7
10	61	169	26	-	32.0
11	63 1/4	183	36 1/4	-	36.6
12	63	162	35	-	20.9
13	58 1/2	116	30	-	-
14	66	167	36	-	12.1
15	63 1/4	122	26	-	-
16	61	125	10	-	-

TABLE 11

Percentage of respondents on each plan having a garden,  
facilities for freezing and processing produce

Factor	Respondents on plan			
	I	II	III	IV
	%	%	%	%
Raised a garden				
Yes	65	22	33	45
No	15	78	61	50
Refrigerator with freezing compartment				
Yes	75	56	44	40
No	20	39	56	60
Canned or froze garden produce				
Yes	50	61	33	35
No	20	39	61	55



TABLE 12

Percentage of respondents on each plan of assistance that have attended nutritional classes or are interested in such classes

Factor	Respondents on plan			
	I	II	III	IV
	%	%	%	%
Have attended nutrition or homemaking classes				
Yes	10	13	17	15
No	60	70	72	75
Interested in homemaking classes				
Yes	5	13	17	-
No	30	48	67	95

TABLE 13

Percentage of respondents on each plan of assistance  
according to group size

Household group size	Respondents on plan			
	I	II	III	IV
	%	%	%	%
Man alone	15	4.3	5.6	20
Woman alone	35	43.5	55.6	50
Couple	15	30.4	5.6	10
Adults	15	4.3	11.1	-
Adults and children	20	17.4	22.2	20

TABLE 14

Percentage of respondents on each plan of assistance  
with individual's analysis of general health

Factor	Respondents on plan			
	I	II	III	IV
	%	%	%	%
Appetite				
Very good	35	35	22	5
Good	20	48	39	70
Fair	35	9	33	20
Poor	5	9	6	5
Nerves				
Very good	5	9	-	-
Good	35	35	22	35
Fair	5	26	17	20
Poor	35	30	-	-
Very poor	5	-	-	-
Sleep				
Very good	35	43	22	10
Good	25	13	28	55
Fair	15	13	33	25
Poor	15	26	17	5
Very poor	5	-	-	5

TABLE 14 (Concl'd)

Percentage of respondents on each plan of assistance  
with individual's analysis of general health

Factor	Respondents on plan			
	I	II	III	IV
	%	%	%	%
General state of health				
Very good	5	13	6	10
Good	50	56	39	50
Fair	15	26	39	15
Poor	10	4	11	-

TABLE 15

Percentage of respondents on each plan consuming snacks

Plan number	I								II							
Snacks consumed per week	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Meat	5	10	-	-	-	-	5	-	26	4	-	4	-	4	-	4
Cheese	-	10	10	5	-	-	10	-	26	-	11	-	-	-	4	-
Candy	-	-	-	-	-	-	-	-	39	-	9	13	4	-	-	-
Soft drinks	10	5	-	-	-	-	5	-	43	4	4	17	-	-	-	4
Coffee, tea	5	-	-	5	-	-	5	-	-	-	-	-	4	-	9	17
Doughnuts, sweet rolls	10	25	-	5	-	-	-	-	43	13	4	4	-	-	-	4
Cookies, cake, pie	20	5	5	15	5	-	-	-	43	4	9	4	-	-	-	9
Fruit juices	10	15	-	-	-	-	15	-	17	-	-	9	-	-	-	17
Milk	-	15	-	-	-	-	-	-	17	4	13	-	13	9	-	-
P. Chips, fritos	25	10	-	-	-	-	-	-	56	9	13	-	-	-	-	-
Nuts	15	-	5	-	-	-	-	-	61	4	-	-	-	-	-	-
Ice cream	5	15	5	10	5	5	10	-	17	22	22	-	-	9	4	4
Crackers	10	10	-	-	-	-	5	-	13	4	9	4	9	4	-	-
Sandwiches	10	-	5	-	-	-	-	-	13	-	-	4	-	-	-	-

TABLE 15 (Concl'd)

Plan number	III									IV								
Snacks consumed per week	0	1	2	3	4	5	6	7		0	1	2	3	4	5	6	7	
	%	%	%	%	%	%	%	%		%	%	%	%	%	%	%	%	
Meat	22	6	-	6	-	-	-	-		10	5	-	5	-	-	-	5	
Cheese	11	11	6	-	6	-	-	6		5	-	15	15	-	-	-	-	
Candy	28	-	11	6	-	6	6	6		25	10	15	5	-	-	-	10	
Soft drinks	39	-	-	-	6	-	-	17		40	-	10	10	-	-	-	5	
Coffee, tea	22	-	-	-	-	-	-	17		20	-	-	-	-	5	-	15	
Doughnuts, sweet rolls	44	11	6	-	-	-	-	-		35	10	5	-	-	5	-	-	
Cookies, cake, pie	33	6	-	6	-	-	-	17		30	5	15	10	-	-	-	-	
Fruit juice	6	-	11	6	6	-	-	6		5	-	5	5	-	-	-	15	
Milk	22	-	6	-	6	6	6	11		25	-	5	5	-	5	-	10	
P. Chips, fritoos	22	6	17	-	-	-	6	6		35	-	5	10	-	-	-	-	
Nuts	39	6	6	-	-	-	-	-		30	5	-	10	-	-	-	-	
Ice cream	11	6	17	11	-	-	-	11		20	10	15	5	5	5	-	-	
Crackers	17	6	6	-	-	-	-	6		10	5	5	10	5	-	-	-	
Sandwiches	22	6	-	-	-	-	-	-		-	-	-	5	5	5	-	-	

TABLE 16

Percentage of respondents in each level of income, on each plan of assistance, with % or total nutritional needs attributable to level of income

Plan	Income level	Percentage of respondents with income	Percentage of respondents with total food intake		
			Under 50%	51-65%	66%-over
I					
	1. Less \$100	50	30	40	30
	2. \$101-150	30	50	33	17
	3. \$151-over	15	--	33	67
II					
	1. Less \$100	30.4	29	71	--
	2. \$101-150	48.8	50	20	30
	3. \$151-over	17.4	20	60	20
	Unknown	4.3	--	--	--
III					
	1. Less \$100	38.9	43	43	14
	2. \$101-150	33.3	50	--	50
	3. \$151-over	27.8	60	40	--
IV					
	1. Less \$100	55	33	44	23
	2. \$101-150	30	25	38	37
	3. \$151-over	15	67	--	33

TABLE 17

Percentage of respondents on each plan of assistance at different age levels

Age level	Respondents on plan			
	I	II	III	IV
	%	%	%	%
Under 35	7.7	--	14.2	12.0
36-45	--	9.6	4.7	4.0
46-65	19.2	32.3	33.4	16.0
Over 66	73.1	58.1	47.7	68.0



TABLE 18

Educational level of respondents on each plan of  
assistance

Educational level	Respondents on plan			
	I	II	III	IV
	%	%	%	%
3rd grade or less	5	--	--	5
4-8th grade	75	69	61	65
9-11 grade	10	22	11	--
High school graduate or more	10	9	28	30

TABLE 19

Percentage of respondents on each plan of assistance  
attributable to educational level and income

Educational level of respondent	Respondents on plan			
	I	II	III	IV
	%	%	%	%
Level 1--8th grade or less				
Income of respondent				
Less \$100/month	90	70	75	56
\$101-150	80	75	50	90
\$151 over	50	75	33	20
Unknown	100	--	--	--
Level 2--9th grade and up				
Income of respondent				
Less \$100/month	10	30	25	44
\$101-150	20	25	50	10
\$151 over	50	25	67	80
Unknown	--	100	--	--

TABLE 20

Percentage of milk group consumed by respondents on  
each plan of assistance

Milk group consumed	Respondents on plan			
	I	II	III	IV
%	%	%	%	%
Over 100	--	13	16	--
100	10	9	6	10
76-99	--	--	--	--
51-75	20	4	--	5
1-50	55	35	39	45
0	15	39	39	40

TABLE 21

Milk consumed by respondents on each plan of assistance

Milk consumed	Respondents on plan			
	I	II	III	IV
	%	%	%	%
Fresh milk	70	87	85	85
Non-fat dry milk	35	17	17	10
Evaporated milk	45	30	17	40

TABLE 22

Percentage of vegetable-fruit group consumed by  
respondents on each plan of assistance

Vegetable-fruit group consumed	Respondents on plan			
	I	II	III	IV
%	%	%	%	%
100	--	--	--	--
76-99	5	4	11	15
51-75	35	39	39	30
1-50	55	57	39	55
0	5	--	11	--

TABLE 23

Daily use of vegetables and fruits by respondents on  
each plan of assistance

Daily use	Respondents consuming vegetables or fruits on plan							
	I		II		III		IV	
	%	%	%	%	%	%	%	%
Number of servings	V <sup>1</sup>	F <sup>2</sup>	V	F	V	F	V	F
1	25	20	39	35	39	44	40	55
2	45	25	43	13	44	33	40	15
3	--	--	--	4	--	--	5	--
Occasionally	10	--	4	17	6	11	--	10
None	20	55	14	31	12	12	15	20

<sup>1</sup>Vegetable

<sup>2</sup>Fruit

TABLE 24

Consumption of vegetables by respondents on each plan  
of assistance

Vegetables consumed	Respondents on plan							
	I		II		III		IV	
	% O <sup>1</sup>	% N <sup>2</sup>	% O	% N	% O	% N	% O	% N
Rich in vitamin A <sup>3</sup>								
Carrots	70	10	65	26	56	44	75	20
Broccoli	20	15	39	30	17	67	20	65
Spinach	60	10	74	22	83	11	75	20
Pumpkin-squash	25	5	26	61	28	56	35	55
Sweet potato	30	10	65	26	56	39	70	25
Asparagus	35	10	34	48	45	50	30	60
Good in vit. A <sup>3</sup>								
Corn	65	10	82	17	78	22	55	40
Green beans	75	--	96	4	84	16	85	15
Lima beans	30	10	17	56	28	61	35	55
Peas	80	--	91	9	84	11	80	15
Tomatoes	90	--	91	9	89	11	95	5
Others								
Cabbage	50	10	70	30	50	50	75	20
Celery	25	20	48	43	62	39	65	25
Cauliflower	20	25	30	43	33	56	35	55
Cucumber	30	15	48	43	56	44	50	40

TABLE 24 (Concl'd)

Vegetables consumed	Respondents on plan							
	I		II		III		IV	
%	%	%	%	%	%	%	%	%
	O <sup>1</sup>	N <sup>2</sup>	O	N	O	N	O	N
Beets	45	25	61	22	50	50	60	30
Green pepper	25	10	43	39	44	50	20	65
Lettuce	55	15	82	13	50	33	50	40
Onions	45	5	61	30	61	28	70	25
Turnips	45	10	39	43	50	33	40	55
Potatoes	60	10	91	9	72	11	80	20

<sup>1</sup>Occasionally

<sup>2</sup>Never

<sup>3</sup>Data from Chaney and Ross (34).



TABLE 25

Consumption of fruits by respondents on each plan of assistance

Fruits consumed	Respondents on plan							
	I		II		III		IV	
%	%	%	%	%	%	%	%	%
	O <sup>1</sup>	N <sup>2</sup>	O	N	O	N	O	N
Rich in vitamin C <sup>3</sup>								
Oranges	60	5	61	26	55	33	65	20
Grapefruit	20	15	64	26	55	44	70	25
Lemon-limes	25	10	30	48	17	61	35	55
Watermelon	30	5	70	22	61	33	55	45
Strawberries	40	5	61	35	72	22	55	40
Cantaloupe	30	5	70	22	61	33	55	45
Others								
Apricots	25	10	39	30	67	33	55	40
Plums	30	25	43	43	39	50	55	45
Peaches	70	10	99	--	89	6	95	5
Cherries	15	15	43	43	33	56	65	35
Apples	70	--	93	17	67	28	100	--
Bananas	50	5	56	30	94	6	60	40
Grapes	40	10	48	48	50	22	50	45
Pears	50	5	70	22	61	28	55	45

TABLE 25 (Concl'd)

Fruits consumed	Respondents on plan							
	I		II		III		IV	
%	%	%	%	%	%	%	%	%
	O <sup>1</sup>	N <sup>2</sup>	O	N	O	N	O	N
Pineapple	30	10	61	26	56	33	70	25
Prunes	50	29	48	13	44	28	45	55
Rhubarb	20	35	43	39	33	61	40	55
Raisins	60	10	65	30	44	44	65	35

<sup>1</sup>Occasionally

<sup>2</sup>Never

<sup>3</sup>Data from Chaney and Ross (34).

TABLE 26

Consumption of vegetables and fruits rich in vitamins A and C by respondents on each plan of assistance

Vegetable-fruits	Respondents on plan			
	I	II	III	IV
	%	%	%	%
Rich source vitamin A <sup>1</sup>				
Carrots	70	65	56	75
Broccoli	20	39	17	20
Spinach	60	74	83	75
Pumpkin-squash	25	26	28	35
Sweet potato	30	65	56	70
Asparagus	35	34	45	30
Tomato	90	91	89	95
Apricot	25	39	67	55
Rich source vitamin C <sup>1</sup>				
Oranges	60	61	55	65
Grapefruit	20	64	55	70
Lemon, limes	25	30	17	35
Strawberries	40	61	72	55
Cantaloupe	30	70	61	55
Tomato	90	91	89	95
Green pepper	25	43	44	20
Potato	60	91	72	80

<sup>1</sup>Data from Hughes and Bennion (35).

TABLE 27

Percentage of bread-cereal group consumed by respondents  
on each plan of assistance

Bread-cereal group consumed	Respondents on plan			
	I	II	III	IV
%	%	%	%	%
Over 100	--	4	17	10
100	40	30	17	30
76-99	30	36	6	15
51-75	20	13	32	20
1-50	5	17	28	25
0	5	--	--	--

TABLE 28

Percentage of respondents on each plan using bread

Bread consumed daily	Respondents on plan			
	I	II	III	IV
%	%	%	%	%
Number of servings				
1	10	13	17	15
2	15	43	22	15
3	50	43	44	50
Kind of bread				
White	80	70	73	90
Whole wheat, rye cracked wheat	30	52	39	25

TABLE 29

Percentage of respondents on each plan using rice

Rice consumed	Respondents on plan			
	I	II	III	IV
	%	%	%	%
Occasionally	70	65	39	60
Never	25	22	61	35

TABLE 30

Percentage of respondents on each plan of assistance  
using cereals

Cereals used	Respondents on plan			
	I	II	III	IV
	%	%	%	%
Dry, prepared	45	48	39	40
Cooked	65	30	28	50

TABLE 31

Percentage of respondents baking breads and pastries on each plan of assistance

Products baked by respondents	Respondents on plan			
	I	II	III	IV
	%	%	%	%
Occasionally				
Bread	35	26	34	20
Biscuits	35	8	12	25
Cookies	30	39	44	40
Cake	40	52	50	45
Cornbread	50	39	56	25
Never				
Bread	40	70	67	75
Biscuits	25	30	56	60
Cookies	25	43	49	40
Cake	25	39	39	45
Cornbread	20	43	39	55

TABLE 32

Percentage of meat group consumed by respondents on each plan of assistance

Meat group consumed	Respondents on plan			
	I	II	III	IV
%	%	%	%	%
100	--	--	--	--
76-99	75	65	67	75
51-75	5	--	--	5
1-50	15	26	27	15
0	5	9	6	5



TABLE 33

Percentage of respondents on each plan of assistance  
using certain foods of the meat group

Foods consumed	Respondents on plan			
	I	II	III	IV
	%	%	%	%
Occasionally				
Cheese	60	83	78	55
Dry beans	80	57	24	45
Peanut butter	75	47	51	40
Eggs	--	65	50	20
Never				
Cheese	15	4	17	15
Dry beans	20	43	67	50
Peanut butter	15	39	22	65
Eggs	--	4	6	--

TABLE 34

Percentage of respondents on each plan of assistance  
with percentages of liquid intake

Liquid intake	Respondents on plan			
	I	II	III	IV
%	%	%	%	%
Water				
100	20	13	17	35
50	80	87	83	65
Coffee				
1 serving	45	56	61	55
2 servings	30	9	11	10
3 servings	10	13	11	15
Tea				
1 serving	20	13	17	20
2 servings	15	9	17	15
3 servings	--	22	--	15

A NUTRITIONAL SURVEY OF CERTAIN KANSAS  
HOUSEHOLD GROUPS ON DIFFERENT WELFARE PLANS

by

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AN ABSTRACT OF A MASTER'S THESIS  
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This study was designed to survey and evaluate the food intake of respondents from low-income household groups on four plans of three basic welfare programs: Plan I, Commodity Distribution; Plan II, Food Stamps; Plan III, Food Stamps available but not chosen to be used; and Plan IV, Public Assistance. The sample included 20% of the total welfare cases who maintained themselves in their own homes in each of three counties.

The 24-hour dietary recall indicated that the respondents did not meet the required Basic Four food groups. No significant differences were found in the recommended daily food intake of respondents attributable to plan of assistance, household group size, age, or level of education. Generally, however, respondents on Plan I consumed a higher per cent of the total recommended daily intake than respondents on any other plan.

A slightly better total food intake was reported by respondents in the middle level of income than for respondents at other income levels. Highly significant differences in intake of the milk group were noted between respondents of income levels 1 and 2, and between those of income levels 2 and 3. No significant difference was noted between respondents on income levels 1 and 3. Households with six or more individuals had the best daily food intake. Age seemed to have little effect on recommended daily intake. Respondents with the highest educational level more nearly met the food allowance than those of lesser educational level.

Respondents on Plan II were the most overweight whereas those on Plan I maintained a more normal weight although differences in the percentage mean values were not significant. Respondents of age 65 or less were significantly more overweight than those over 65. On the average, respondents living alone were more overweight than those living in larger household groups.

There were highly significant differences in skinfold thickness measurements. The skinfold measurements for the younger group of 65 years or less was greater than for those of the other group.