

FACTORS WHICH AFFECT THE NUTRITURE OF SECRETARIES
WHO ARE WIVES OF STUDENTS

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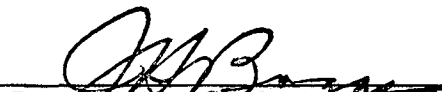
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TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION	1
Statement of the Problem	1
II. REVIEW OF THE LITERATURE	4
What Homemakers Know About Nutrition	4
Dietary Study Methods	7
Length of Period Covered by Dietary Intake	10
Recommended Dietary Allowances	12
Calculating the Nutritive Value of Diets	14
How to Formulate a Questionnaire	17
III. METHOD AND PROCEDURE	21
IV. RESULTS	23
Questionnaire Findings	23
Dietary Survey	28
V. SUMMARY AND CONCLUSIONS	31
SELECTED BIBLIOGRAPHY	33
APPENDIX	37

LIST OF TABLES

Table	Page
1. Advance planning of meals by 58 subjects	23
2. Foods eaten for snacks	24
3. Sources of food supply other than purchased groceries . .	25
4. Places children (30) ate lunch and percentage eating at each place	26
5. Length of training of 58 subjects in how to plan and serve family meals	27
6. Source of training in how to plan and serve family meals	27
7. Average daily intake of 58 subjects as compared to the 1963 Recommended Dietary Allowances	30
A. Two-day dietary averages of each of the 58 subjects	46

CHAPTER I

INTRODUCTION

Statement of the Problem

The nutriture of individuals, regional groups, and cultural groups has been the subject of many research studies. The information on nutritional status obtained from these findings has been used to increase the knowledge of nutrition in both health and disease and as a basis for nutrition education.

Nutritional status, or nutriture, has been defined as the state of health of the individual or group as conditioned by choice and amount of foods, or nutrients, eaten. (29) In this study a nutrient is the chemical constituent of foods required by the body for normal growth and function.

Many factors affect the way food is prepared, served, and eaten in the home. One of the main factors is the values expressed by the individual or family. Values arise from the culture in which one lives, and values differ in different cultures.

Webster defines "culture" as the act of developing by education. Therefore, the attitudes, values, habits, and customs one has are learned, so they are subject to change.

Gross and Crandall (17) state that values are generalized concepts which are important to the individual; values govern the choice of methods, modes, or goals of action. An individual indicates his values

by the way he uses his resources and chooses to be among people who share his values.

The purpose of this study is to determine some of the factors affecting the nutriture of a selected group and to identify any relationships between the factors and their nutritional status. The results should indicate the adequacy of the dietary intake.

Since values are learned and are subject to change, those values related to nutrition can be changed if the individual is shown the need. The author intends to use the information gained in this study to augment the values related to nutrition within the selected group.

The subjects in this study are composed of secretaries who are wives of Oklahoma State University students. It is assumed that this group will have similar problems in securing and preparing food for themselves and their families. It is also believed that there are a sufficient number of secretaries in the category given above to supply subjects for the study.

The following statements are postulated:

1. The average daily intake of food nutrients consumed by a group of campus secretaries can be determined.
2. Factors can be identified which cause high or low intakes of food nutrients consumed by the secretaries.
3. As the number of courses received in the study of home economics increases, the adequacy of the food intake improves.

To gain information about the factors affecting the nutriture of the subjects, a questionnaire was used. The questionnaire consisted of inquiries which aided in the detection of the factors influencing nutritional status. The secretaries also recorded their dietary intake in terms of measured food portions for two days. The nutrient content of

these two-day records was determined by calculation. The mean daily nutrient intake for each subject was compared to the Recommended Dietary Allowances for 1963.

CHAPTER II

REVIEW OF THE LITERATURE

What Homemakers Know About Nutrition

Although the over-all population in the United States is in general well-nourished, there are many individuals and individual families who are not as well fed as is possible. Since there is an abundance of food and dietary weaknesses have been found not to be related to income (39), the lower-than-desirable dietary intakes may be due to the nutritional education of the homemaker. This problem led Young and her co-workers in 1953 to do a study of the nutritional knowledge and practices of homemakers in two New York cities, Rochester and Syracuse (40, 41, 42, 43).

Young's study was designed to be descriptive of the following information:

- a. the homemaker's knowledge of food and nutrition as applied to feeding her family;
- b. the relationship between her nutritional knowledge and actual practices in feeding her family;
- c. the problems of the homemakers in planning, buying, or preparing foods for their families and some of the possible means for helping with the problems;
- d. the sources from which the homemaker believed she received her nutritional information; and
- e. certain habits with regard to shopping, meal planning, food expenditures and eating.

Data were gathered by personal interviews between a trained interviewer and the homemaker and lasted approximately one hour. The interviewer used a pre-tested, open-end type of questionnaire consisting of 96 questions. The sample represented a random cross section of homemakers in the two cities--331 Rochester and 315 Syracuse households.

To determine nutritional knowledge questions were asked related to (41, p. 218):

- a. What should be included in meals for the family each day and why?
- b. What did the term "balanced diet" mean to the homemaker?
- c. Did she know what is meant by the term "Basic 7"; could she name any of the groups?
- d. Did she serve any "good for you" foods, "child" foods, or "husband" foods--and why was each "good for you"?
- e. How often did the homemaker think certain basic foods should be used?
- f. How much knowledge did the homemaker have of foods of similar food value which could be used in place of certain basic foods?

From responses to these questions the homemakers seemed to have a fair understanding of nutrition as related to the feeding of their families. They knew more about meats, fruits, and vegetables than other items in the diet, but they could not discriminate between values in different kinds of fruits and vegetables. The greatest need for more nutritional knowledge was on: "ascorbic-acid-rich fruits and vegetables; carotene-rich fruits and vegetables; adult need for milk; nutritional value of breadstuffs and cereals and of butter and fortified margarine" (41, p. 222).

Formal educational attainment appeared to be the most important factor related to knowledge of nutrition. The homemakers who had "studied about what to eat" had a better knowledge of nutrition than those who had not. They reported schools as the place where they had "studied about what to eat."

In regard to the relation of knowledge to practice (42), those homemakers who had "studied about what to eat" had better feeding practices in their families than those who had not.

When asked about food problems, shopping habits, and sources of information, the better educated homemaker expressed more problems and had more desire for help. She did more advanced meal-planning. Her sources of information included: school, home economics teacher, group meetings, magazines, and newspapers.

Of the 646 homemakers studied, slightly over one-third had studied about foods; for three-fourths of these, the study had been in schools.

In 1963 Roberts (30) analyzed homemakers' responses to questions about persons, information sources, reference materials, and mass media as factors influencing food planning and purchases. He considered education as one of the factors relating to the responsiveness of homemakers to different situations in regard to food choices. The samples--5,017 white and 2,161 Negro families living in 114 cities in seven southern states--were drawn at random.

Roberts found that the influence of family, friends, and relatives increased consistently with successively higher levels of education. The homemakers whose education was above average responded to the widest variety of stimuli.

In 1964 Young et al. (48) mailed unsolicited recipes on the use of cottage cheese to 1000 homemakers. One-half of the homemakers received a multi-colored folder giving recipes and also an envelope stuffer printed in color giving recipes. The other half received the same recipes in a duplicated letter printed in black ink. Their purpose was to determine (a) what the homemakers recalled about, and (b) what they did with mailed

material in general and recipes in particular. Data were obtained from 754 women by telephone interviews.

On the acceptability of mailed material, the awareness and interest of the homemakers increased as their educational level increased. For those homemakers who received the booklet printed in color, the return was:

- a. grade school education--16 per cent;
- b. high school education--28 per cent;
- c. attended or completed college--41 per cent.

For those who received the letter printed in black ink, the return was:

- a. grade school education--24 per cent;
- b. high school education--29 per cent;
- c. attended or completed college--41 per cent.

The greatest difference was eight per cent between the homemakers with grade school educations.

Dietary Study Methods

Hoobler (18, p. 557) has stated that there are two reasons for determining nutrient intake:

1. to learn the food intake of individuals
2. to obtain information about food patterns and actual food intake of population groups.

These studies are approached by chemical procedures and by inquiry methods. Since the author's study is concerned with an estimate of the nutrient intake, inquiry methods will be discussed. It should be remembered that at the present time there is no all-purpose best method for determining nutrient intake of individuals or population groups. (18)

There is a necessity for a greater standardization of methods that determine and evaluate the nutrient intake. This need is the result of:

1. the accelerated pace of research
2. the increased variation in presentation of results in the literature
3. the need for a more rapid translation of experimental knowledge into applications in medicine, public health, and education (20).

There have been many dietary studies which have used inquiry methods with varying degrees of precision and usefulness. The usefulness of the method is dependent upon the purpose for which it is designed, the degree of accuracy necessary to accomplish the purpose, the limitations, and the way it is applied. The greatest limitation is the one of human error which is the most difficult to estimate.

The dietary studies which have been made were primarily short-term studies and usually concerned with the over-all nutritive value of the diet relative to some standard. The only one which covered the dietary intake over a long period of time was the research diet-history method developed by Burke (5).

She or other trained nutritionists conducted an interview which continued until a complete record was made of the usual food intake for the period under consideration with its variations carefully recorded in kinds and amounts of foods. Then they did a "cross-check" to verify the information. Afterwards the subject kept a record of his food intake for three consecutive days. From these sources the amount of each food or food group which was most representative of the subject's average intake was determined. The nutrients of this average intake were calculated from food value tables and rated according to the scale: "excellent," "good," "fair," "poor," or "very poor." The values for the scale were

comparable to those later recommended by the Food and Nutrition Board of the National Research Council.

Burke felt that the dietary history, when properly used, served its purpose and was of great value. One had to know its limitations in evaluating the data so that the evaluations would not be used beyond the limits of their dependability.

Several studies have been made that compare dietary methods. One of the first was done by Huenemann and Turner in 1942 (19). They compared the research type of dietary history with a fourteen-day weighed food record for twenty-five subjects aged six to sixteen. A diet history was obtained by interviewing mother and child. The previous day's intake, "usual" daily intake, and food purchases were discussed in detail. To check on the accuracy and reliability of the diet history, a food record was kept for two weeks. Weighing the food was more satisfactory than measuring it. It was found that no history agreed with the dietary record within 20 per cent for all constituents.

Young, et al. (45,46) in dealing with grade school, high school and college students; pregnant women; and male industrial workers compared the dietary history, seven-day record, and 24-hr. recall. They found that for the mean of the group, the dietary history gave higher values than did the estimates obtained by the 24-hr. recall. The seven-day record and the 24-hr. recall tended to give approximately the same estimates for the dietary intake for most nutrients. (Calories, iron, vitamin A, thiamine, riboflavin, niacin, ascorbic acid, protein, calcium, and phosphorus.)

Length of Period Covered by Dietary Intake

How long a period must one study an individual's intake to obtain a clear picture of his current intake? The evidence for determining the length of the period has come from studies concerned with the nutritive adequacy of diets.

There are several methods for collecting data for the study of the nutritive value of the diets of various population groups. The dietary record, which consists of a detailed quantitative listing of all foods consumed by an individual during a given time, has been one of the methods frequently used (44). How many and which days the record should cover are questions that have not been fully answered and are still being debated today.

Leverton and Marsh (26) did a study in 1939 comparing the food intakes in nitrogen and calcium during weekdays and week-ends (Saturday and Sunday) on 24 college girls on self-chosen diets. There were 16 studies of one week's duration on 15 girls and eight studies of ten-day duration on eight girls. When the average daily intakes for seven days were compared with those for ten days, the average differences were small--6.5 per cent for nitrogen and 5.5 per cent for calcium. Differences more than twice as great (15.9 per cent and 12.7 per cent for nitrogen and calcium, respectively) occurred when five-day periods consisting only of weekdays were compared with those consisting of three weekdays plus Saturday and Sunday. They concluded that the results indicated a definite and significant variation in food intakes for weekdays and for week-ends when college girls were living on self-chosen diets. The authors suggested that food intake or metabolism studies of subjects on self-chosen diets would yield the most repre-

sentative data when conducted for periods of at least one calendar week or in units of one week.

Chalmers et al. (6) investigated how many and which days the dietary record should cover. Seven-day dietary records were kept by junior high pupils, college students, pregnant women, and male industrial workers in the New England states. For characterizing a group by its mean intake, a one-day record was found to be the most efficient when the relative importance of the number of days was compared to the number of subjects. On the average, it was immaterial which day was chosen, since no "day effect" could be discerned with the exception of the college students who had a lower intake over the week-end (6, p. 716). They recommended that before surveying any particular group the "which day" should not be assumed without investigation.

Chalmers et al. stated that there was an increase in precision when the number of days in the dietary record were increased for smaller groups--samples less than 25 subjects.

Trulson (36) found that the initial day of record-keeping had no predictable influence. She used 252 seven-day records kept by ten-to twelve-year-olds in two schools to study the variability in intake for one-, three-, and seven-day periods by means of the standard deviation. As the number of days increased the standard deviation was reduced. The extent of the reductions depended on the nutrient or food under investigation.

In 1953 Young et al. (47) made a study of the weekly variation in nutrient intake of 18 adults aged 23 to 50 who ate mostly in their own homes. The subjects recorded their dietary intake in terms of estimated or measured food portions for 28 days. The record for each individual

was calculated in terms of the average weekly and the average 28 day nutritive value. When the average intakes for the group were examined, one week was found to be representative of the 28 day period.

When Eppright et al. (12) collected dietary information about groups of children, they found that any one combination of three days during the week represented the weekday intake as accurately as another, but week-end food habits were likely to differ significantly from those of the five school days. The authors stated that there is probably no "rule of thumb" regarding the number of days which should be observed or the seasons which should be represented (12, p. 46).

Recommended Dietary Allowances

The dietary allowances officially were presented in May, 1941, at the National Nutrition Conference which met in Washington, D. C., at the call of President Franklin D. Roosevelt. Their objective was to provide guidance in planning diets for population groups so that nutritional adequacy would be assured as much as possible during World War II.

The title "Recommended Dietary Allowances" was selected to make it clear that the levels of nutrient intake recommended were not final judgments and were subject to periodic evaluations. It was also chosen to avoid a false representation of the allowances as either minimal or optimal nutrient requirements.

The allowances (13, p. 1) are designed to maintain good nutrition in healthy persons in the United States under current conditions of living and to cover nearly all variations of requirements for nutrients in the population at large. They provide a margin of safety above minimal requirements and act as a buffer against the added needs of stress. The

allowances are not intended to meet the additional requirements caused by disease or nutrient depletion.

The margin of sufficiency varies widely among the single nutrients listed. This is due to the relative differences in storage capacity in the body, the range of requirement among individuals, the difficulty of assessing precise requirements, and the possible hazard of excessive intake of some nutrients.

Diets providing less than the Recommended Dietary Allowances do not necessarily imply nutritional deficiency. The allowances are a reference, and the total of an individual's nutritional status should be observed before deviations are interpreted.

The allowances do not allow for losses due to storage, cooking, or serving. They do provide for incomplete absorption or availability of certain nutrients such as iron and carotene.

The different objectives of national food standards should be noted. The Canadian standard is one of minimal nutrient requirements. If one does not meet the standard, his health may not be maintained. The British standard aims at maintenance of good nutrition in the average person but does not provide the margin of safety provided by the United States Standard (13).

The 1963 revision of the Recommended Dietary Allowances is the same as the 1958 revision with minor exceptions. The allowance for calcium for children between ages one and nine years has been lowered from 1 gm. to 800 mg. due to a re-examination of calcium utilization by the body. The iron requirement for women ages 18-55 was increased 3 mg per day.

In earlier revisions the calorie requirements for the Recommended Dietary Allowances were based on the report of the Committee on Calorie

Requirements of the Food and Agricultural Organization (FAO) of the United Nations. The FAO based the calories needed for their "reference man" on activity and basal heat production; and they devised a mathematical expression for the energy requirement: $\text{calories} = 815 + 36.6 \times \text{wt. (kg.)}$
 $= 3194$. Currently it is felt that the reference man as defined by the FAO probably exerts more energy in bodily activity than the average American. Therefore, they devised a mathematical expression for the calorie requirements of the reference man and woman in the United States: $\text{calories} = 725 + 31.0 \times \text{wt. (kg.)} = 2895$.

The Recommended Dietary Allowances also provide allowances for protein, iron, vitamin A, thiamine, riboflavin, niacin, and ascorbic acid.

Calculating the Nutritive Value of Diets

Dietary computations based on the "long" method are both time-consuming and laborious. The long method involves either a direct chemical analysis of all foods eaten during a period of time or the calculation of the nutritive value of each item in the diet. Bransby, et al. (4, p. 232) found that the average group values for calories, protein, fat, carbohydrates, and calcium by calculation from food tables were in sufficiently good agreement for practical purposes with those obtained by chemical analysis. Thus, one might assume that for average group values the values of foods given in food tables would be reasonably accurate.

Shorter methods of dietary calculation were suggested as early as 1918 by Hunt (21, p. 212). She proposed a quick method for estimating the protein and fuel value of meals and days' rations. The foods were divided into groups and sub-groups, and proteins and calories were determined by means of average values for each group.

Rowntree (31, p. 156) felt that the wide variation in food due to climatic conditions, state of maturity, and method of preparation made complete accuracy impossible. She thought the students should learn the protein, fat, and carbohydrate content of foods by grouping them into classes and computing the average composition figures.

In 1943 Berryman and Chatfield (3, p. 23) proposed their short method of calculating the nutritive value of diets. They based their procedure on the grouping of foods into seventeen classes on the basis of:

1. similar nutritive value
2. special function in the diet
3. unique contribution to the value of the diet.

The validity of the method was dependent upon obtaining the group nutritive values which properly represented the food habits involved. Berryman and Chatfield believed that this method was adaptable and a valuable means of obtaining a rough measure of the probable nutritional value of the diet concerned.

A short method of dietary analysis was proposed by Donelson and Leichsenring in 1942 (9, p. 429). This method was based on the use of representative mean values for the composition of food groups. A food composition table was set up using the mean values for each group. Two revisions of the table were made after 1942--one in 1945 (10) and the other in 1951 (25). Factors which influenced the revisions were the additional information found on the nutritive value of foods and the improved economic status which resulted in changes in food consumption habits in the United States. Foods which deviated enough in composition from the means of the groups were listed separately.

The means for the food groups in the 1951 food composition table were procured from weighting each food in accordance with the most recent report on food consumption in the United States--in this case from 1945-1948 (24, p. 806). Weighting a food refers to the frequency of a food eaten as compared with the frequency of another food eaten. The difference in the frequency is considered before the two foods are averaged. For example: An orange may be eaten twice as often as a grapefruit; therefore, the values of an orange would be multiplied by two before the means were derived.

The values used were for cooked foods except for those foods usually eaten raw. The values were computed from figures in the 1950 Agriculture Handbook No. 8 and the 6th edition of Bowes and Church.

The accuracy of the values was tested on two series of dietary records. The records were computed by the long method of calculating each food separately and then by the short method. A high degree of accuracy was shown by the short method. The differences were shown by statistical tests to be due to errors in random sampling and not to real differences between the two methods. Leichsenring and Wilson (25) stated that the agreement between the long and short methods of dietary calculation is improved as the length of the observation period is increased.

Today there are instruments possessing differing degrees of automation which increase calculation speed. One of the simpler calculating devices is the "Rapidiet Calculator" (28). It enables the operator to add the values of calories and nine nutrients for any combination of foods on cards with bar graphs. The nutritive values are given in terms of common household units. With experience and good dietary records one can complete a calculation of a 24-hour dietary record in 10 to 15

minutes. The time is even shorter when cards representing nutritive values of food groups are used.

Another instrument used to speed calculations is the modern computer (35); however, it is faster in calculation than the "Rapidiet Calculator," but its cost is greater. Too, there is considerable time spent in preparing the cards for the computer.

How to Formulate a Questionnaire

Barr et al. (2, p. 63) define "a questionnaire as a systematic compilation of questions that are submitted to a sampling of population from which information is desired." A questionnaire is used when one cannot see all of the respondents personally or when there is no need to see them personally. Normally when a questionnaire is sent, an addressed stamped envelope is supplied for the return.

According to Koos (23, p. 51) the questionnaire can be used in three ways:

1. to ascertain the state of practice in some field of activity;
2. to secure basic data; and
3. to secure opinions, judgments, preferences, or the expression of attitude of respondents along a variety of lines.

The questionnaire is generally regarded as more dependable when used to obtain statements of fact rather than opinions.

Different questionnaires may require different types of response. The types of response include: simple information, variable verbal responses, yes or no, checking, ranking, rating, and weighting.

Approaches to the respondent are many and varied, and they should be carefully planned to ensure a large return. One approach is to allow the respondent to omit his signature and assure him that his replies will

be kept confidential. Another is to promise a summary of the findings to those who desire it. There is an increasing belief that the latter approach should be done whenever the burden imposed upon the respondents is more than a minor one, unless the findings are such as to make it impracticable.

The effectiveness of the questionnaire may be increased by requiring information which can be supplied with little difficulty. Often short-answer items will give the desired information in a readily usable form and take less time to answer. While a questionnaire should be as brief as possible, factors such as timeliness, merit of the study, and adequate motivation often offset the disadvantage of length.

Great care should be taken in the preparation of the questionnaire. Koos (23, p. 162) recommends four stages:

1. Very careful formulation by the author and arrangement in the form to be used;
2. Submission to some expert for advice and correction;
3. Try-out on teachers or others not primarily concerned--disinterested persons;
4. A try-out of the revised questionnaire on a group as nearly like the ones to whom it is to be sent as possible.

These try-outs often show the inaccuracies of statement, the equivocal questions, and other undesirable features that can be corrected before the questionnaire is actually sent out for replies.

Questionnaires, when carefully planned around the objectives of an investigation, the kinds of data needed, and the ability and willingness of the respondents to supply data, are capable of yielding reasonably accurate results. The validity of a questionnaire is increased with the amount of care, patience, and effort given in its construction. Blankenship (2, p. 108) suggests the following means of improving validity of a questionnaire:

Thorough understanding of the specific problem must precede questionnaire construction, and various factors must be taken into account: the critical character of the first few questions; the avoidance of ambiguity; the use of words understood by the lowest class of respondent; the use of questions that are reasonable and concrete; the adapting of questions to the type of person interviewed; neutral phrasing of questions and avoidance of suggestion.

Research on the reliability of questionnaires has reached no definite conclusions. Gerberich (15) suggests that further research be conducted to determine the accuracy of questionnaire responses as well as the consistency of responses.

Several studies have been made on how to increase responses to questionnaires. Slocum et al. (33, p. 221) suggested that motivation to response can be increased by conscious effort on the part of the researcher to:

1. establish an image of social utility of the survey in terms of the value system of the society, group, and/or community under study, and
2. emphasize the special role of each respondent in making possible the attainment of the maximum social utility by the survey.

The procedure of phone contacts is limited to research where the area of research is relatively local. The questionnaire utilized in Waisanen's study (37) contained more than 40 items inquiring about income, education, occupation, and such. The sample was composed of 150 TV families and 150 non-TV families selected randomly in Iowa City, Iowa. From each sample every third name drawn was not phoned; the others were phoned to see if they would participate. Of the TV owners phoned, 47.8 per cent responded; of the TV owners not phoned, 28 per cent responded. Of the non-TV owners phoned, 44.7 per cent responded; of the non-TV owners not phoned, 24.5 per cent responded.

When phoning is utilized (37, p. 210), it

1. provides a personal contact;
2. elicits a promise to cooperate which may be an effective "reminder" until the questionnaire is completed and returned, and
3. provides an opportunity to emphasize the "brevity" of the questionnaire and that it is easy to complete.

Longworth (27) conducted a series of pre-tests on a questionnaire to try to increase the percentage of returns. In each of the pre-tests 50 respondents were selected by random process from the Toledo, Ohio, telephone directory.

In his study the placing of small denomination stamps of various colors on the envelope increased returns by two percentage points. A personal note and typed letter of explanation on letterhead paper increased returns by five percentage points. When a newspaper clipping relative to the study was included, a further increase of five percentage points was noted. The use of a follow-up phone call increased returns by 37 per cent. On the final pre-test a total of 69 per cent of the questionnaires were returned.

Quite often the use of a "deadline" is effective in stimulating an immediate heavy response.

CHAPTER III

METHOD AND PROCEDURE

In order to determine how many secretaries who were student wives were working on campus, a list of office employees was obtained from the Registrar's Office. From this list secretaries who were wives of students were identified by checking names and addresses in the Student Directory. A sample of 161 student wives who were working as secretaries were available.

Information on forming questionnaires were studied before the questionnaire was devised (2, 23, 33, 37). Instructions for recording the two-day dietary record and forms for recording the dietary record were also made.

The questionnaire, instruction sheet, and dietary forms were pre-tested on six subjects who had backgrounds similar to those subjects in the sample. Their comments and questions were taken into consideration in the revision of these devices.

Next the questionnaire, instruction sheet, and dietary forms were taken to a statistician, Dr. Carl E. Marshall. He made many helpful suggestions. The author had planned to telephone wives in the sample until she obtained cooperation from 100 subjects. One of the suggestions of the statistician was to telephone a portion of the sample and ask them if they would be willing to be subjects. From their reaction the number of subjects that would participate in the study could be estimated. This

was done, and it was estimated that 90 per cent would participate.

After changes had been made on the instruction sheet, it was returned to the statistician and received his approval.

The questionnaire, instruction sheet and dietary forms were printed at the Engineering Duplicating Service and then sent to 161 subjects by campus mail. See Appendix. The subjects were requested to return them within two weeks.

The answers to the questionnaire were compiled. The diets were calculated using a Rapidiet Calculator and the short method of dietary analysis supplemented by Church and Church (7) and The Home and Garden Bulletin No. 72 (8). An average of each subject's two-day record was compared to the 1963 Recommended Dietary Allowances to determine the percentage of each nutrient eaten.

The results of the questionnaire, the average two-day food intake of the group, the average of each individual subject's food intake, and A Daily Food Guide listing the foods in each of the Basic Four Food Groups were sent to each subject. (20, 14).

CHAPTER IV

RESULTS

Questionnaire Findings

On the questionnaire 43.1 per cent of the subjects planned meals ahead and 56.9 per cent did sometimes. How far ahead the menus were planned ranged from 1.8 per cent for one month, 29.4 per cent for one week, 6.9 per cent for three days, 37.9 per cent for one day, 12.0 per cent for one meal, to 12.0 per cent for none. See Table 1 below.

TABLE 1 ADVANCE PLANNING OF MEALS BY 58 SUBJECTS

Time	Number of Subjects
none	7
1 meal	7
1 day	22
3 days	4
1 week	17
1 month	1

In Spindler's study (34) a few homemakers indicated that they planned their meals a week in advance, but most planned their meals from day to

day or from meal to meal.

In this study sixty-two per cent remembered what they had planned by memory while 29.3 per cent used a grocery list, and 8.7 per cent used written menus. Thirty-one per cent planned their grocery list according to preplanned menu needs, 20.6 per cent did not, and 48.4 per cent did sometimes.

None of the homemakers prepared meals regularly for anyone other than their families.

Fifty per cent consciously bought foods for snacks, 19 per cent did not, and 31 per cent did sometimes. See Table 2 below.

TABLE 2. FOODS EATEN FOR SNACKS*

Snack Foods	Number
Meal leftovers	5
Fruit	37
Milk	20
Soft drinks	40
Candy	20
Popcorn	25
Rolls	19

*Other foods eaten for snacks included: cookies, cakes, pies, jello, cheese, crackers, pretzels, potato chips, dips, ice cream, sardines, fruit juices, coffee, and toast. Many homemakers marked several foods eaten for snacks.

Several of the homemakers had a source of food supply other than purchased groceries. See Table 3 below.

TABLE 3. SOURCES OF FOOD SUPPLY OTHER THAN PURCHASED GROCERIES*

Source	Number
Parents' home	20
Other relatives	2
Farmers	4
Oklahoma State University	2
Friends	1
Own garden	2

*Not all subjects had other sources of groceries.

Foods received from these sources listed in Table 3 included: home canned foods, fresh garden products, fresh frozen meats, fresh eggs, milk, and butter.

The answers to "How often do you buy groceries?" varied. One and seven-tenths per cent bought groceries three times a week, 12 per cent bought groceries twice a week, 72.3 per cent bought groceries once a week, 6.8 per cent shopped every two weeks, and 6.8 per cent shopped once a month. Most of the homemakers in Spindler's study shopped once every week or once every two weeks. A few shopped about every day and a few once a month.

Fifty-five per cent of the wives, 43 per cent of both husband and wife, and 1.8 per cent of husbands shopped for the groceries. Spindler

(34) states that although the majority of the wives shopped alone, a sizable group shopped with their husbands.

None of the homemakers received meals where they worked. Three meals were eaten at home by 68.9 per cent while 27.5 per cent ate two meals at home and 3.6 per cent ate only one meal at home. Of the 16 who ate two meals at home, five ate breakfast and dinner, and 11 ate lunch and dinner. Dinner was the only meal eaten at home by two homemakers.

Four of the working wives carried their lunch to work and three did sometimes. The others did not. Two husbands carried their lunch to work and three did sometimes. The majority ate at home.

Of the 58 working wives of students, 20 had children. The children ate lunch at various places. See Table 4 below.

TABLE 4 . PLACES CHILDREN (30) ATE LUNCH AND PERCENTAGE EATING AT EACH PLACE

Place	Percentage
School lunch	13.1
Nursery school	26.1
Baby-sitter's home	52.1
Home	8.7

Sixty per cent of the homemakers had had training in how to plan and serve family meals while 40 per cent had not. The length of training which varied from one week to six years is illustrated in Table below.

TABLE 5. LENGTH OF TRAINING OF 58 SUBJECTS IN HOW TO PLAN AND SERVE FAMILY MEALS

Time	Number of Subjects
0 weeks	22
1 week	1
2 months	2
3 months	2
4.5 months	2
5 months	2
6 months	1
1 year	7
1.5 years	1
2 years	3
3 years	3
4 years	7
5 years	3
6 years	2

Table 6 shows who gave the homemakers their training.

TABLE 6. SOURCE OF TRAINING IN HOW TO PLAN AND SERVE FAMILY MEALS*

Source	Number Trained
Grandmother	5
Other relatives	10
High School home economics teachers	31
College home economics teachers	5
4-H Leaders	8
Others	3

*Several of the working homemakers marked more than one source of training.

Sources of current information about food and meal service included: relatives, friends, cookbooks, magazines, newspapers, television, textbooks, and extension. Most of the homemakers marked several sources.

"Tricks of the Trade" in planning, preparing, and serving meals showed that some of the working wives were really planning. These are some of their "tricks."

1. Cook the main dish the evening before it is to be served.
2. Use the pressure cooker to save time and speed up the preparation time.
3. Prepare more than is needed for one meal and freeze the rest for another meal.
4. Try one new recipe every two weeks.
5. As soon as the meat is purchased, divide it into the number of portions you want and freeze. It saves time and reduces the amount of waste.
6. Prepare muffin tins the night before with a ring of bacon and place an egg in the center. Refrigerate. Cook in the morning while you are dressing.

Dietary Survey

The results of the dietary survey indicated that the 58 working wives of students consumed two-thirds or more of the nutrients recommended by the 1963 Recommended Dietary Allowances except for iron. Iron fell below the margin of safety and only met 57.3 per cent of the recommended allowances. See Table 7.

Protein, thiamine, and niacin were the nutrients that met 100 per cent or more of the 1963 Recommended Dietary Allowances while calcium, iron, vitamin A, riboflavin, and ascorbic acid were the nutrients that did not. Calories were also lower (17 per cent) than the amount recommended by the 1963 allowances. There was no subject whose dietary intake reached 100 per cent of the levels recommended in all nutrients.

A number of the diets did not contain enough milk, ascorbic acid-rich fruits and vegetables, iron-rich foods, and vitamin A-rich foods.

TABLE 7. AVERAGE DAILY INTAKE OF 58 SUBJECTS AS COMPARED TO THE
1963 RECOMMENDED DIETARY ALLOWANCES

	Calories	Protein Gm	Calcium Gm	Iron Mg	Vitamin A IU	Thiamine Mg	Ribo- flavin Mg	Niacin Mg	Ascorbic Acid Mg
Average intake of working wives of students	1807	66.5	0.616	8.6	4033	0.855	1.25	23.8	58.0
1963 RDA	2100	58.0	0.800	15.0	5000	0.800	1.30	14.0	70.0
Percentage of RDA Ingested	86%	114%	77%	57.3%	80.6%	106%	96.1%	170%	82.8%

Too many of the diets consisted of coffee and doughnuts for breakfast and sandwiches and cokes for lunch. Dinner was the main meal, and it usually was well-balanced. The time element of getting ready for work and having one hour for lunch probably could account for the poorer diets. Management of time could be improved and meals could be better planned.

CHAPTER V

SUMMARY AND CONCLUSIONS

A questionnaire and a two-day dietary record were kept by 58 secretaries who were wives of students at Oklahoma State University.

The average daily food intake of the subjects provided two-thirds or more of the nutrients as recommended by the 1963 Recommended Dietary Allowances with one exception. Iron was the only nutrient that fell below two-thirds of these allowances. The diets generally were low in milk, ascorbic acid-rich fruits and vegetables, iron-rich foods, and vitamin A-rich foods. Many of the secretaries had sandwich-type meals for lunch which did not encourage a liberal intake of fruits and vegetables. It is also possible that low food budgets reduced the amount of fruits and vegetables purchased. It was believed that poor time management and planning contributed to the less desirable dietary intakes.

It was found that the adequacy of the food intake did not improve as the number of courses received in the study of home economics increased. No subject in this study completely met the 1963 Recommended Dietary Allowances for all nutrients. Of the 36 subjects who had had training, only 13 had a dietary record that met two-thirds of the recommended allowances in seven of the nine nutrients. The other 23 fell below the margin of safety in three or more nutrients. Fourteen of the 22 subjects who had had no training had dietary records that met two-

thirds of the 1963 Recommended Dietary Allowances in relation to seven of the nine nutrients. Thus, those who had no training in how to plan and serve meals had better diets than those who had had training. Those who had no training may have felt a greater need to read current magazines and newspaper articles and to consciously plan more than those who did have some knowledge.

The author recommends that if a related study is done, the age of the subjects be obtained in order to determine if they are within ten per cent of the desirable weight for their height and build.

She also suggests that the person conducting the study contact the subjects to see if the information they received from the research project had any effect on their dietary practices.

It is recommended that the question, "Do you take vitamin supplements?" be included in the questionnaire. If vitamin supplements were taken, the average nutrient intake would be increased accordingly.

In general, the secretaries were well fed. Iron was the only nutrient which fell below two-thirds of the 1936 Recommended Dietary Allowances. Since these allowances have approximately a 50 per cent safety factor, two-thirds of the allowances will meet the needs of the average subject.

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A P P E N D I X

Request for Cooperation in Study

Your participation is requested in some research which is a part of thesis being carried out in the Department of Food, Nutrition and Institutional Administration.

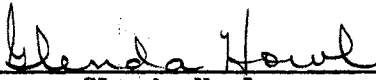
If you are willing to cooperate, please do the following:

1. Complete the enclosed questionnaire by answering all questions. (If you are on a diet prescribed by a doctor, you will be ineligible to participate.)
2. Keep your dietary record for a two-day period, but do not include Saturday or Sunday. Please use Tuesday and Wednesday or Wednesday and Thursday consecutively. Do not include days when you serve guest meals.

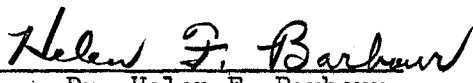
The dietary record is numbered, so your name will not be known when your diet is calculated. All information will be kept confidential.

When the dietaries have been evaluated, you will receive a report of how your dietary record compared with the other subjects' records and with the Recommended Daily Dietary Allowances. You will also receive a copy of the National Dairy Council's "Guide to Good Eating."

Thank you very much for your cooperation. If you have any questions, please call me at Ext. 7349. Please return the completed food intake record and questionnaire to me by April 9 by campus mail to HEE 108.



Glenda Howl
Graduate Student
FNIA Department



Dr. Helen F. Barbour
Graduate Advisor
FNIA Department

QUESTIONNAIRE CONCERNING FOOD MANAGEMENT
OF WIVES OF STUDENTS

DATE _____

NAME _____

ADDRESS _____ TELEPHONE NUMBER _____

HEIGHT _____ WEIGHT _____

STATE OF HEALTH: EXCELLENT _____ GOOD _____ FAIR _____ POOR _____

OCCUPATION OF HUSBAND _____

NUMBER OF CHILDREN: BOYS _____ GIRLS _____

AGES OF CHILDREN _____

PLACE OF EMPLOYMENT _____

HOURS WORKED PER WEEK _____

DAYS-OFF _____

Please check an answer to each question. (✓) Return the completed questionnaire via campus mail to: Glenda Howl, Graduate Student, FNIA Department, HEE 108, by April 9.

1. Do you set aside a certain amount of money for food each payday and try to stay within the amount?

Yes _____ No _____

2. Do you plan meals ahead?

Yes _____ No _____ Sometimes _____

3. If yes, how far ahead do you plan?

One meal _____ One day _____ Three days _____

One week _____ Other _____

4. How do you remember what you have planned?

Written Menus _____ Grocery List _____ Memory _____

5. Do you regularly prepare meals for others than your family members?
 Yes _____ No _____ If yes, who? _____
 Which meals? _____
6. Do you plan your grocery list according to preplanned menu needs?
 Yes _____ No _____ Sometimes _____
7. Do you consciously buy certain foods for snacks?
 Yes _____ No _____ Sometimes _____
8. What kinds of foods do you eat for snacks?
 Meal leftovers _____ Fruit _____ Milk _____ Soft drinks _____
 Candy _____ Popcorn _____ Rolls _____ Others _____
9. How many snacks do you usually eat per day?
 None _____ One _____ Two _____ Three _____ Other _____
10. Do you have a source of food supply other than purchased groceries?
 Home-canned foods _____ Fresh garden products _____
 Fresh frozen meats _____ Fresh eggs _____ Others _____
11. Are there other places from which you obtain groceries?
 Parents' home _____ Own garden _____ Friends' home _____
 O.S.U. _____ Others _____
12. How often do you buy groceries?
 Before each meal _____ Once a day _____ Twice a week _____
 Once a week _____ Other _____
13. Who shops for the groceries?
 Wife _____ Husband _____ Both husband and wife _____ Other _____

No. _____

14. How many meals do you usually eat at home per day?

Three meals _____		Breakfast _____
	Which two?	Lunch _____
Two meals _____		Breakfast _____
		Dinner _____
One meal _____	Which one?	Breakfast _____
		Lunch _____
		Dinner _____

15. Are your meals furnished where you work?

Yes _____ No _____ Sometimes _____

If yes, which meals?

Breakfast _____ Dinner _____ Supper _____

16. Do you carry lunch to work?

Yes _____ No _____ Sometimes _____

17. Does your husband carry lunch to work?

Yes _____ No _____ Sometimes _____

18. Where do your children (if any) eat their lunch?

School lunch _____ Nursery School _____ Baby-sitter's home _____

Your home _____ Other _____

19. Have you had any training in how to plan and serve family meals other than at home?

Yes _____ No _____

20. If yes, where did you get this training?

Grandmother _____ Other relatives _____

High school home economics _____ College home economics _____

4-H leaders _____ Other _____

No. _____

21. How long did you receive the training in schools or clubs?
(Give the number of weeks, months, etc.)

Weeks _____ Months _____ Years _____

22. What are your sources of current information about food and meal service?

Mother _____ Other Relatives _____ Cookbooks _____

Magazines, newspapers, TV _____ Others _____

23. Do you have any "Tricks of the Trade" that you use to plan, prepare, or serve meals? If so, please share them with us.

No. _____

INSTRUCTIONS FOR RECORDING FOOD INTAKE

1. a. Under the heading "Meals" write down the foods eaten for each of the regular meals and the foods eaten between meals (snacks) for each of the two days.
 - b. Under the heading "Amount of Food" write down the amount eaten of each food using the standard unit measurements as indicated below under instructions 2 and 3.
 - c. Under the heading "Eating Place" write down home, cafeteria, Holiday Inn, and such.
 - d. It is most important to have a complete food record of each day's food intake, so please note instructions 4 through 8.
2. Estimate the size of serving and fractional part, if less than one serving is eaten.

Ex. Cooked or dry cereal-cups

Meat loaf	- 1 slice 4"x3"x3/8"	Cake	- 3"x2"x2" piece
Mashed potatoes	- 1/2 cup	Pie	- 1/6 of 9" pie
Broccoli	- 2 stalks	Soft drinks	- cups
Canned Peaches	- 1 half plus 1 Tbsp. juice	Apple	- 1 medium

3. Include all items added to servings of food such as:

Ex. Gravy	- Tbsp or cup
Salad dressing	- Tbsp
Butter or margarine	- tsp
Icing or sauces on desserts	- Tbsp
Whipped cream or ice cream on desserts	- Tbsp
Cream or sugar in beverages	- tsp
Jams, Jellies, honey, and marmalade	- tsp
Pickles, olives, nuts, potato chips	- number
Candy	- piece or bar
Fruit garnishes	- number of pieces

4. List parts of sandwiches if they are eaten: i.e. bread, amount and kind of filling, mayonnaise, tomatoes, butter.
5. State the manner in which foods are prepared--baked, broiled, fried, creamed, scalloped.
6. Indicate the type of milk consumed in cups--whole, skim, buttermilk, nonfat dry, chocolate.
7. Indicate the kind of fruit eaten and amount--fresh, canned, frozen, sweetened, unsweetened.
8. If mixed dishes such as grapefruit and orange section are eaten, write down the amount of each ingredient separately.

RECORD OF FOOD INTAKE FOR ONE DAY

Date: _____

<u>Meal</u>	<u>Amount of Food</u>	<u>Eating Place</u>
-------------	-----------------------	---------------------

BREAKFAST:

SNACK:

LUNCH:

Record of Food Intake

<u>Meal</u>	<u>Amount of Food</u>	<u>Eating Place</u>
-------------	-----------------------	---------------------

SNACK:

DINNER:

SNACK:

TABLE A. TWO-DAY DIETARY AVERAGES OF EACH OF THE 58 SUBJECTS

Calories	Protein Gm	Calcium Gm	Iron Mg	Vitamin A IU	Thiamine Mg	Riboflavin Mg	Niacin Mg	Ascorbic Acid Mg
2449	82.6	1.08	11.5	6462	1.42	2.03	29.0	35.3
2304	86.5	1.14	8.6	2912	1.17	2.13	29.6	52.0
1168	56.3	0.35	8.3	1746	0.74	0.94	19.5	18.5
1697	41.3	0.23	8.1	4640	0.89	1.18	18.5	47.5
2425	98.4	1.08	12.7	9182	1.55	1.66	32.0	86.5
1996	73.9	0.82	9.1	4962	0.99	1.86	26.0	103.0
1578	64.7	0.33	8.5	2084	0.83	0.97	29.5	24.5
1796	65.0	0.59	7.2	4121	0.74	1.20	21.6	28.0
2387	67.6	0.87	12.3	3805	0.94	1.65	28.0	86.7
1253	44.6	0.57	10.0	21143	0.73	0.76	17.0	34.0
2063	69.6	1.03	10.0	8332	1.06	1.76	23.0	36.0
3534	106.0	1.07	12.3	2339	1.21	2.29	40.4	35.0
1705	69.1	0.38	10.2	5491	0.86	0.84	26.6	41.0
2384	84.6	0.89	9.7	2944	1.16	1.89	31.4	138.0
1924	68.2	0.98	7.2	6019	0.86	1.72	23.3	45.0
1140	56.2	0.17	8.5	2697	0.44	0.73	22.1	22.5
887	41.5	0.27	5.0	2473	0.50	0.70	15.6	23.0
1552	54.3	0.27	7.8	2570	0.54	0.69	20.0	28.0
1779	57.7	0.37	8.0	2148	0.77	0.72	24.3	61.3
1513	54.8	0.49	8.0	1563	0.58	1.16	17.9	7.0
1655	55.9	0.46	7.0	1958	0.49	0.87	23.6	48.0
2109	87.3	0.73	8.9	4602	0.86	1.15	33.9	30.5
1990	101.2	1.73	10.8	2519	1.25	2.69	31.9	68.0
1702	52.5	0.26	9.8	4240	0.86	0.62	24.0	137.0
1274	50.0	0.75	6.1	1549	0.57	1.26	16.2	38.0
2006	65.2	0.51	8.8	2887	0.62	1.15	31.0	53.0
1420	60.1	0.81	4.6	5516	0.64	1.39	22.3	92.0
1269	38.0	0.47	6.6	4120	0.44	0.77	12.4	66.0
2538	78.1	0.60	10.2	2746	0.74	1.35	28.7	149.0

Calories	Protein Gm	Calcium Gm	Iron Mg	Vitamin A IU	Thiamine Mg	Riboflavin Mg	Niacin Mg	Ascorbic Acid Mg
2091	74.4	0.26	11.9	2197	1.05	1.04	26.4	26.0
1879	70.2	0.53	7.4	1997	0.73	0.87	26.2	177.0
1730	73.8	0.53	7.2	4301	0.55	1.15	24.0	71.0
1920	79.8	0.84	10.3	2776	1.05	1.69	17.5	37.0
2976	91.6	0.99	9.6	5215	1.24	1.72	31.3	102.0
1643	66.8	0.55	4.3	2093	0.56	1.06	26.5	28.5
1257	49.5	0.24	5.8	1355	0.39	0.55	15.1	24.5
2311	91.2	1.22	9.1	2601	1.08	2.12	29.8	62.0
1531	61.0	0.50	9.0	6770	0.85	1.13	21.4	117.0
1508	49.9	0.52	5.3	620	0.47	0.66	17.0	10.0
3138	132.1	1.55	15.8	4354	1.89	2.93	38.0	45.0
1735	67.7	0.46	7.0	1185	0.77	0.96	25.0	70.0
1733	71.6	0.37	10.8	7050	1.00	0.87	26.2	89.0
1207	76.0	0.82	11.8	2133	1.63	1.63	25.9	45.0
1161	54.6	0.29	11.0	6480	0.86	0.75	21.1	82.0
1999	75.1	0.85	9.6	2759	1.03	1.73	25.1	91.0
1786	42.2	0.47	6.9	3468	0.82	0.99	17.0	23.0
1410	73.2	0.47	4.8	5774	0.56	1.17	19.7	78.0
1455	61.4	0.33	4.2	2019	0.55	1.00	22.3	21.0
1475	48.1	0.48	8.3	1627	0.87	0.99	18.4	18.0
1198	24.8	0.16	4.3	2316	0.43	0.42	12.2	35.0
1495	54.6	0.21	7.9	1404	0.70	0.69	20.3	20.0
1482	57.1	0.75	8.5	11047	0.64	1.86	20.8	15.5
1989	61.3	0.83	7.7	2884	0.92	1.39	20.2	55.0
1876	68.3	0.23	8.3	2694	0.78	0.80	25.1	73.0
1446	49.4	0.20	7.0	7478	0.62	0.66	17.8	92.0
2708	84.7	0.49	14.8	2886	1.80	1.27	33.8	116.0
1129	58.8	0.70	5.7	4761	0.63	1.29	23.1	84.0
2068	57.2	0.63	8.7	3917	0.72	1.35	16.9	23.0
Totals								
104833	3857.6	35.77	498.8	233932	49.64	72.87	1383.4	3365.3
Average								
1807	66.5	0.616	8.6	4033	0.855	1.25	23.8	58.0

There was no one whose dietary intake reached the levels recommended in all nutrients. Iron, calcium, vitamin A, and ascorbic acid were generally low. If your diet fell below two-thirds of the Recommended Dietary Allowances, you should give serious thought to how to improve it.

On the questionnaire 43.1 per cent planned meals ahead and 56.9 per cent did sometimes. How far ahead the menus were planned ranged from 29.4 per cent for one week, 37.9 per cent for one day, 12.0 per cent for one meal, 12.0 per cent for none, 6.9 per cent for three days, to 1.8 per cent for one month. Sixty-two per cent remembered what they had planned by memory while 29.3 per cent used a grocery list, and 8.7 per cent used written menus.

Fifty per cent consciously bought food for snacks, 19 per cent did not, and 31 per cent did sometimes. Forty-six per cent ate one snack a day, 25.8 per cent ate two, 15.5 per cent ate three, and 5.1 per cent ate none.

Twelve per cent bought groceries twice a week and 70.6 per cent bought only once a week. Fifty-five per cent of the wives and 43 per cent of both husband and wife did the shopping for the groceries.

Sixty per cent had had training in how to plan and serve family meals while forty per cent had not. The length of training varied from one week to six years.

Tricks of the trade included:

1. Cook the main dish the evening before it is to be served.
2. Use the pressure cooker to save time and speed up the preparation.
3. Prepare more than is needed for one meal and freeze the rest for another meal.
4. Try one new recipe every two weeks.
5. As soon as the meat is purchased, divide it into the

number of portions you want and freeze. It saves time and reduces the amount of waste.

6. Prepare muffin tins the night before with a ring of bacon and place an egg in the center. Refrigerate. Cook in the morning while you are dressing.

I want to thank you again for your time and cooperation in participating in this study. Without you it would not have been possible.

Sincerely,



Glenda Howl
FNIA Graduate Student

VITA

Glenda Howl

Candidate for the Degree of

Master of Science

Thesis: FACTORS WHICH AFFECT THE NUTRITURE OF SECRETARIES WHO ARE WIVES OF STUDENTS

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