

A NUTRITIONAL ASSESSMENT OF CHILDREN
WITH FAILURE-TO-THRIVE

by

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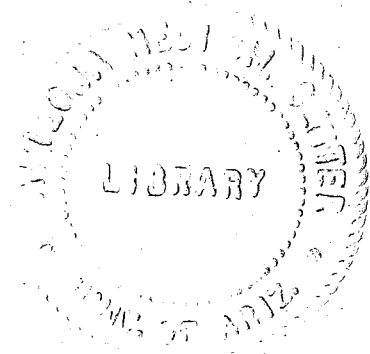
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DEDICATION

This manuscript is fondly dedicated to the memory
of

ADAM WHEELER

who, in his short life, showed me new aspects of love,
compassion, and dedication in life and in nursing.

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ABSTRACT

This study was an attempt to measure the caloric value of foods ingested by children with failure-to-thrive. The research also tried to identify and describe factors which may have led to a caloric intake which would not promote growth.

The population sample consisted of five children, two boys and three girls, ranging in age from nine months to four years, three months. All of the children were underweight. Two children had been hospitalized with the diagnosis of failure-to-thrive. One other infant had been hospitalized for gastroenteritis, while the other two children in the study sample had histories of hospitalization for other nonrelated diseases.

The findings of this study were not conclusive. Estimates of the caloric values for each child were found to be below the Recommended Dietary Allowances for children of his or her age and sex. Mothers of this study spontaneously reported factors they felt were influencing their abilities to meet their children's needs.

Recommendations for future study include investigation of the nutritional factors in failure-to-thrive,

experiments conducted to test the anxiety of nonthriving children in various settings, and measurement of stress factors influencing the mothers of children with failure-to-thrive.

CHAPTER 1

INTRODUCTION

Failure-to-thrive is not a new diagnostic concept in pediatric medicine or psychiatry. Symptoms were formally introduced by Spitz (1945, 1946) when he reported his observations of growth failure and anaclitic depression manifested by children and infants in orphanages or foundling homes. Since the time his findings were first reported, other scientists--Bowlby (1951), Yarrow (1961), and Bakwin (1949)--have undertaken similar studies of the effects of institutionalization and maternal deprivation.

More recent investigations--those completed in the past fifteen years--have dealt with failure-to-thrive and emotional responses in noninstitutionalized children. The results of these studies indicated that growth failure occurred most frequently with maternal or environmental deprivation when a physiological explanation could not be found.

The physiological effects of maternal deprivation are being questioned at present. Some doctors and nutritionists are wondering if failure-to-thrive, or growth failure, is due to failure to eat rather than resulting primarily from emotional deprivation.

The purpose of this study is to investigate the nutritional aspects of failure-to-thrive. Specifically, the study attempts to measure the caloric value of foods fed to the infants and children by their mothers. An attempt will also be made to identify any factors which may be influencing or may be resulting in an insufficient caloric intake.

Statement of the Problem

A characteristic symptom of failure-to-thrive is the loss of weight despite a good appetite in the child. However, previous research indicates that the mothers of nonthriving children are under severe emotional stress and anxiety, and are unable to "give" of themselves to meet their children's needs. This study attempts to answer these questions: Do children with failure-to-thrive have a caloric intake which will promote growth? If not, what are the underlying factors influencing their food intake?

Conceptual Framework

General Theory

The most generally accepted etiological factors underlying failure-to-thrive are stress and anxiety. These phenomena are present not only in the parent-child or mother-infant relationship but also exist in the environment and in the personalities of the parents.

This study does not attempt to deal directly with stress. However, as anxiety and stress may play a role in failure-to-thrive, it becomes necessary to have some understanding of these elements.

The psychological stress theory proposes that the common denominator of stress situations is reaction to circumstances of threatening significance to the organism (Lazarus 1966). The characteristics of a situation act as stimuli of stress, but they do not determine the nature of the organism's response. The response depends on the way the situation is viewed by the threatened organism. The severity of stress depends on the organism's ability to cope with or withstand the stress. Anxiety may result if an organism is unable to handle a situation, or if its usual methods of coping are blocked.

Some human sources of stress result from internal and external frustrations, conflicts, or pressures. Competition, social mores, demands of others, injuries, and rapid change are examples of external factors which may lead to stress and may produce feelings of insecurity, isolation, or inadequacy (Coleman 1964).

Internal frustrations often arise from psychological barriers in the form of reality and ethical controls. Failures resulting from personal limitations may produce anxiety and lead to self-devaluation (Coleman 1964).

In Western culture, people depend on their relationships with others for their security. Often this sense of security may be lost through circumstances over which one has no control. Since security is a basic human need, any threat to this security results in actions to maintain a secure status. When an individual finds himself in this position, he is likely to divert many of his energies to cope with the threat of loss. In building defenses for coping with one stress, the individual typically suffers a lowering of tolerance to other stresses (Selye 1956). He may neglect aspects of his environment in order to cope with the loss of security. This study attempts to identify factors in a family's environment which may be influencing the nurturing relationship and thereby the caloric intake of a child.

Application of Theory to Research

Some authors--Elmer (1960), Ribble (1965), and Rhymes (1966)--stated that failure-to-thrive is a result of maternal deprivation or a disturbed mother-child relationship. Psychological stress and anxiety in the mother were found by these authors to be significant causes for the lacking relationship. The mothers of these children are unable to meet the infants' basic needs for love and security

because they are not loved or secure in their own environment.

Mothers of failure-to-thrive children must often be the providers for the one-parent family and assume the responsibility of dealing with the socio-economic factors of life. The stress of these added burdens to child care can give the mother a feeling of helplessness. She may become so involved in trying to cope with the situation and perhaps her own emotional deprivation that she can no longer expend the energy to meet her children's needs too.

Without love, security, and perhaps food, the child fails to thrive and so may his mother. Seeing her child become unresponsive, sick, and pale produces more guilt and stress in the mother, and often she is overwhelmed by anxiety.

This research assumes that most mothers are under some amount of stress. The study will not measure the stressful factors but rather ask if these factors are interfering with the caloric intake of foods fed to children with failure-to-thrive by their mothers.

Assumptions

1. Severe psychological stress reduces perception and increases rigidity of cognitive processes.

2. A person under stress may have difficulty seeing new factors or reinterpreting a situation.

3. Coping with stress produces fatigue and expends energies which may have been available for other psychological processes.

4. Most mothers in this study will be under some psychological stress.

Definitions

The following definitions of terms are used for the purpose of this study:

Stress: Any condition which threatens the organism and requires adjustive behaviors.

Anxiety: A state of emotional tension producing uneasiness or apprehension.

Maternal deprivation: Lack of adequate care and environmental stimulation by a mother or mother surrogate.

Failure-to-thrive: A state of being determined by the presence of malnutrition, "growth retardation, with or without associated developmental deficit and the absence of organic disorder sufficient to account for these deviations (Togut, Allen and Lchuck 1969, p. 601)."

Nutrition: "A combination of processes by which the living organism receives and utilizes the nutrients from

food for the maintenance of its functions and for the growth of tissue (Mitchell et al. 1968, p. 4)."

Malnutrition: "The organism fails to receive or can not utilize the essential nutrients (Mitchell et al. 1968, p. 4)."

Infant: A child who is less than one year of age.

Limitations

This study was restricted by the following factors:

1. The population sample was composed only of children and infants who met the sample criteria in that their physical condition was representative of the stated definition of failure-to-thrive.
2. This study was biased as the population was composed only of children whose mothers agreed to participate in the study.
3. The nutritional information was reported by mothers of the nonthriving children rather than being collected by the researcher's direct observations.
4. Only children whose mothers understood, spoke, and wrote English were included in the study.

Organization of the Study

This chapter has described the concepts of failure-to-thrive or growth retardation, the conceptual framework, and the problems to be studied.

The following chapter consists of a literature review describing the appearance of children with failure-to-thrive and those elements of family pathology and stress which may lead to growth failure.

Chapter 3 discusses the research design, the study sample, and the instruments selected to gain and interpret data.

An analysis of the data collected from research interviews is presented in Chapter 4.

Chapter 5 consists of a discussion of research findings, their application to nursing, and recommendations for further study.

Chapter 6 is a summary of the information given in the preceding five chapters.

CHAPTER 2

REVIEW OF LITERATURE

The following chapter is concerned with the appearance of a child or infant with symptoms of failure-to-thrive. It also describes some elements of family stress and differing parent-child relationships which may lead to growth failure.

Failure-to-Thrive

"The diagnosis of failure-to-thrive is used for infants who have severe malnutrition and faulty physical and emotional development due to a very disturbed mother-child relationship (Marlow 1969, p. 322)."

The importance of a mother-child relationship is not to be denied. Mothering includes the gamut of things from providing love and comfort, encouraging sensory stimulation and growth and development, to meeting physiological needs of the child.

A "successful" mother must communicate to her child that he is a worthwhile being, that he is loved for himself. This message is sensed by the child when his needs are being met in a comforting, gentle, and loving manner. He begins to learn through his mother and father that the world is a

friendly or a hostile place for him, and he instinctively responds to the message. A common assumption is that all children receive an adequate amount of love and live in a friendly environment; but it is not until one views a child who does not, that a conceptual discrepancy becomes evident.

The child who is experiencing maternal deprivation has a distinctive affect. He is usually apathetic and has a sad or rigid and unexpressive facial expression. The infant may be irritable and often is withdrawn from interaction or relationships with the adults caring for him. He may be anorexic and indulge in sucking his fists, completely oblivious to his environment. Social responses are obviously lacking, and upon testing, development may be definitely retarded. The picture ranges from the marasmic child to one who presents with more subtle signs such as moderate decrease in subcutaneous tissue (Togut et al. 1969).

Togut et al. stated that the

diagnosis of nonorganic Failure-To-Thrive Syndrome appears to require the identification of three primary elements: Lack of organic etiology for growth failure with associated evidence of inadequate care, response to a therapeutic regimen, and marked psycho-social pathology implicating the family unit (1969, p. 601).

The environmental and social factors which lead to growth failure appear to be similar for most children suffering from maternal deprivation or failure-to-thrive.

Rhymes (1966), Elmer (1960), Ribble (1965), and others have

found that the mother-child relationship is lacking or that family development itself is retarded. Four features these authors have found to be common elements in the disturbed relationships are:

1. The mother is unable to care for her child due to anxiety, neurosis, or severe stress. A deprived child is most often an infant from one to six months of age. Frequently he has siblings who are thriving. Circumstances surrounding the child's birth or family problems may leave his mother in a situation that is so stressful to her that she may no longer be able to give to a child. Her energies are being spent in trying to solve her own problems, in meeting her own needs, or in dealing with stressful situations. The father may be absent from the home or not employed, leaving financial and social burdens for the mother to carry. The mother may become so overwhelmed with this responsibility, added to caring for her other children, that she cannot nurture the child.

2. Mothers without support from their absent husbands often have no one to lend them emotional support. They may not have supportive relationships with their own mothers and may have nowhere to turn. This, coupled with stresses of living, can make a mother depressed and leave her with a feeling of despair. These feelings can multiply as a mother cares for a child with failure-to-thrive. Most

of the babies have a history of feeding problems, evidenced by vomiting, excessive irritability, and fretfulness. The nonthriving children give rise to feelings of guilt, inadequacy and frustration in their mothers. This factor gives rise to more anxiety being sensed by the child, which results in more feeding problems, and the cycle grows in dimension.

3. There were often disturbing events associated with the pregnancy or birth of the child. Case presentations in the literature showed that in many cases the mother had toxemia, sometimes the child was slightly premature, or more frequently, the child was unwanted.

4. Immature and neurotic personalities of the parents interfere with child care. The mother and/or father need to be cared for as a child. They cannot care for a child when their own narcissistic attitudes are foremost. Many times the child becomes a pawn in a marital conflict. Ribble (1965) stated that when there are serious and persistent maladjustments between parents, the child's psychological stability is inevitably threatened, and his development does not proceed smoothly. The youngest baby is affected from the beginning by the emotional tone in the parental relationship.

Harlow and Prugh (1962) make some different categorizations. The first type of relationship described is

called "distorted relatedness." A child has a specific but distorted meaning for the parent. He may not be viewed as an individual with integrity of his own right. A symbiotic relationship is another example of distorted relatedness.

The second classification is "insufficient relatedness." "The parent may, because of unhealthy characterological or deeply neurotic or psychotic tendencies quite independent of the child be unable to relate warmly to the infant (Harlow and Prugh 1962, p. 16)."

Maternal deprivation need not occur in a mother-child relationship. Huxley wrote: "Give me good mothers and I shall make a better world (in Lebovici 1962, p. 93)." Lebovici himself stated the converse: "Make me a better world and I shall give you good mothers." It is unfortunate that in failure-to-thrive both are true.

CHAPTER 3

RESEARCH PROCEDURES

This study is concerned with an assessment of the caloric values of foods ingested by children with failure-to-thrive. The research was constructed to identify factors which may have been influencing the children's intake, and subsequently influencing their state of growth failure.

Design of the Study

This study was designed so that the researcher would be able to visit the mothers and children of the study sample in their homes. An interview with each mother and an assessment of each child's physical status and level of development were used to gather data used in the study.

The Denver Developmental Screening Test (DDST) (Frankenburg and Dodds 1967) was administered to determine whether the development of a particular child was normal or whether developmental lags were present.

A physical assessment of a child's or infant's general physical condition was performed by the researchers. The assessment relied on outward manifestations of dehydration and malnutrition, such as dry scaling skin and sunken fontanelles.

Information pertaining to the family's and child's dietary habits and patterns were ascertained from the mother in the interview. General information about the family was also gathered in this manner. A questionnaire was devised to identify possible social and economic stress factors in the home. Questions pertaining to this aspect of the study were asked toward the end of the interview to establish rapport because of the sensitive nature of the information.

At the completion of the interview, each mother was given a daily dietary form to complete over a period of one week. Idealistically, everything her child consumed was listed on the form by the parent, with the amounts ingested placed to the side of each item. The researcher anticipated that a mother may have entered foods her child had not eaten in order to comply with what she thought were the expectations of the researcher of a "good" and "proper" diet.

Measurement Instruments

The Denver Developmental Screening Test is a tool to determine the developmental delays in children from birth through six years of age. The intelligence of a child is not measured. The test relies on observations of a child's activity by the researcher and those which are reported by the parent to obtain an estimate of the child's level of development. The screening device was standardized on a cross section of the Denver child population.

The interviewing instruments and the physical assessment categories used in this study were adapted from those found in Screening Children for Nutritional Status, a publication of the United States Department of Health, Education, and Welfare (1971). These forms are presented in Appendix B.

The physical assessment form is composed of eleven categories which describe the appearance of body features, such as the teeth, eyes, and skin. A twelfth category considers the general appearance of the child and his response to his environment. The child's height, weight, and head circumference are also listed on this form, and a section is allowed for the observer's comments.

General information about a child's previous dietary history is gathered by another questionnaire. The form lists the child's birth date, weight, and sibling birth order, plus examining feeding patterns during the first year of life. This form also gathers information pertaining to immunizations, serious illnesses, and hospitalizations.

The third form is mainly related to the child's intake and feeding patterns, although data concerning dietary abnormalities, such as pica, can be ascertained. Information relevant to the occurrence of vomiting and diarrhea, or a child's refusal of food is also gathered with this questionnaire. The mother is questioned as to what she thinks her child should be eating and is asked to describe

her feelings about her child. Again, space is left for the researcher to report observations of the child's activity and of the interaction between parent and child.

The final questionnaire is designed to gather data about the socio-economic status of each family. Information on this form is concerned with establishing if a child's parents are in the home and caring for him, or if there are parental surrogates present. The parents' educational background is included, as well as the yearly income and sources of income.

The daily dietary intake form, developed by the researcher, was used to gain data for the measurement of the caloric value of foods ingested by the child. Instructions are placed at the top of the form which ask each mother to list all the foods and liquids consumed by her child, and to enter the amounts next to the food items. Verbal directions, which correspond to the written instructions, were also related to the mothers. Days of the week are listed on the top margin. Each day, or twenty-four hour period, is broken into six sections so that snacks and meals might be remembered more easily.

Percentile growth charts, published by Mead Johnson Laboratories, were used to evaluate the heights and weights of children in this study. The separate charts for boys and girls are standardized on repeated measurements of more than

one hundred white infants of North European ancestry living under normal conditions of health and home life in Boston, Massachusetts. The measurement distribution is expressed in percentiles ranging from one-hundredth percentile to the third. The number of the percentile refers to the position a measurement would hold in any typical group of one hundred infants. The tenth percentile indicates that nine infants of the same age and sex would be expected to be smaller in the measurement being considered, while ninety would be expected to be larger.

Target Population and Study Sample

The target population in this study was composed of children and infants who met the following criteria:

1. They were gaining in weight and height at rates at the tenth percentile or less.
2. Their growth retardation and state of malnutrition was not present due to any organic disorders or factors.
3. They were between the ages of one month to five years.
4. Their mothers were literate in English and showed willingness to participate in this study by signing a consent form, presented in Appendix A.

The study population was composed of five children who met these criteria. Ten children were referred from a

public agency, but only two of these were in malnourished states which were not attributable to organic disorders. Three infants in the study sample were discovered by the researcher in two local hospital pediatric units. Two of these three were admitted with the diagnosis of failure-to-thrive. The third was diagnosed as having gastroenteritis of unknown origin.

Test of Design

The study design was first tested with two mothers of well children. These mothers had very active schedules, as both were students as well as homemakers. The researcher hoped that their living conditions might represent elements of stress which could be found in the families of the sample study. Only the interview tools and the dietary form were tested with these mothers. The dietary form was completed in an acceptable manner by both of the mothers. The interview tools met the requirements needed to obtain the desired data.

A third pilot study was conducted using one of the ten children from the public agency. The researcher used the physical assessment form and the interview tools in interviewing the child's mother. The daily dietary form was explained and left with her. This mother did not complete the dietary form in the week allotted, and she was given another week to do so. The form was not filled out by the

third week as there had been a family "crisis" according to the mother, and she asked for another week's extension.

During the third week of the pilot study, the researcher discovered two children of the study population as patients in local hospitals. One of the children was discharged to his home at that time, and the researcher decided to begin collecting data. The dietary form this child's mother completed was accurate and the caloric intake was measurable.

The mother in the pilot study returned her form after four weeks with no information recorded. She had attached a note which said that she had told the researcher what her child ate during the interview and therefore did not feel obligated to complete the form.

Despite the indication that mothers might not be willing to cooperate and invest the time in collecting intake data, the researcher decided to use the dietary form as a measurement tool. This decision was based on the information from the two mothers in the first pilot study and from the information obtained about the child of the sample population. None of the information collected from the pilot interviews was included in the final research data.

CHAPTER 4

PRESENTATION AND ANALYSIS OF DATA

This chapter presents the findings and analysis of data collected for this study. First, the characteristics of the sample are presented. Next, the data related to the statement of the problem are analyzed. This is followed by a comparison of factors which were present in the children's environments or home situations. Subsequent chapters discuss the interpretation of these findings, suggest nursing implications, and give recommendations for further study.

Characteristics of the Sample

The sample population was composed of five children ranging in age from nine months to four years, three months. Two of the children were boys of nine and nine and one-half months of age. The three girls were aged ten months, twenty months, and four years, three months. Every child in the study sample had a past history of feeding difficulties manifested by vomiting and/or diarrhea. None of them were experiencing these problems during the time this study was conducted. All of the children had a history of hospitalizations. Three of the infants had been admitted to local

hospitals two months before the study began with diagnoses of failure-to-thrive and/or gastroenteritis. This was the second admission in seven months for one of these three infants to be treated for symptoms of failure-to-thrive. One of the other two children had been hospitalized for pneumonia and the other for an elevated temperature. Neither admission had taken place within six months of the start of this study.

The outward physical manifestations of failure-to-thrive were somewhat similar in all the children. Every child was underweight and was below the average height of children of his age and sex. Minor manifestations of malnutrition, such as dry hair and dry skin, were noticeable in two of the female population. Two of the other infants were pale in color. All of the children were alert, responsive, and aware of their environment. None were apathetic or irritable at the time of the study. Data pertaining to the children's ages, sex, weights, heights, and number of hospitalizations are summarized in Table 1.

Each of the children exhibited delayed development in one or more areas measured by the DDST. Major lags for all of the children occurred in the personal-social aspect of the test. Two of the five children also showed delayed gross motor development. The four-year-old girl refused to be tested, even after three home visits, so that the data

Table 1. Characteristics of the Sample

Child	Age	Weight	Height	Rank in Normal Percentile Group
Girl A	10 months	16 pounds	26 inches	third
Girl B	20 months	22 pounds	30.5 inches	tenth
Girl C	4 years, 3 months	30 3/4 pounds	29 3/4 inches	tenth
Boy A	9 1/2 months	16 pounds, 5 ounces	27 inches	third
Boy B	9 months	14 pounds, 8 ounces	25.5 inches	below the third*

Number of Hospitalizations

Child	Recent**	Previous***	Diagnosis
Girl A	1	1	Failure-to-thrive
Girl B	0	1	Elevated temperature
Girl C	0	1	Pneumonia
Boy A	2	0	Gastroenteritis
Boy B	1	0	Failure-to-thrive

*The third percentile is the last measurement in percentiles so marked on the growth chart. The infant's measurements were below this percentile and could not be designated accurately.

**Recent--less than three months before the study began.

***Previous--more than three months prior to the start of the study.

in three areas of her development were inconclusive. This information is summarized in Table 2.

Findings Related to the Caloric Intake

The first question proposed in this study asked if children with failure-to-thrive had a daily caloric intake which would promote growth.

The data from the dietary intake forms were, in all cases except one, not specific enough to permit an accurate caloric measurement of ingested foods and liquids. The mothers were asked to record amounts by ounces or table-spoons, but the foods were not listed in these specific measurements. However, the researcher has made an attempt to estimate the caloric totals of a "typical" day for each child. These estimates are not conclusive data but rather should serve as examples of the amounts and types of foods the children consumed. The caloric estimates and types of foods eaten by each child are presented in Table 3.

The researcher⁴ adjusted the recommended caloric allowance for each child in relation to his age and sex. The recommended amount of calories for children under one year of age is $115+15$ Cal./kg. The researcher used the weight of an infant of the same sex and age as the sample child at the fifteenth percentile on the growth chart. That weight in

Table 2. Developmental Delays Present in the Study Sample*
 (The listed items are those which each child failed to pass)

Child	Personal-Social	Fine Motor	Language	Gross Motor
Girl A	1. Initially shy with strangers 2. Plays pat-a-cake			1. Stands holding on 2. Pulls self to stand
Girl B	1. Imitates housework		1. Points to one named body part 2. Combines two different words 3. Follows directions 2/3	
Girl C	1. Separates from mother easily 2. Dresses without supervision	Refused	Refused	Refused
Boy A	1. Initially shy with strangers 2. Plays peek-a-boo 3. Plays pat-a-cake			
Boy B	1. Initially shy with strangers 2. Plays pat-a-cake 3. Works for toy out of reach	1. Thumb-finger grasp 2. Bangs two cubes held in hands		1. Sits without support 2. Stands holding on 3. Pulls self to stand 4. Gets to sitting position 5. Walks holding furniture

*As measured by the Denver Developmental Screening Test, developed by Frankenburg and Dodds 1967.

Table 3. Estimated Caloric Intake and Representation of the Four Basic Food Groups During a Twenty-four Hour Period

Child	Caloric Intake		Food Groups				
	Actual	Recommended*	Cereals	Dairy Products	Fruits	Vegetables	Meats
Girl A	1,077	1,150	x	x	x	x	x
Girl B	937	1,300		x	x	x	x
Girl C	1,217	1,520	x	x	x		x
Boy A	891	1,150	x	x	x		x
Boy B	995	1,150	x	x	x	x	x

*The recommended caloric allowance has been adjusted for each child in relation to his age and sex. The researcher used the weight of an infant of the same sex and age as the sample child at the fiftieth percentile on the growth chart. That weight in kilograms was then multiplied by 115 calories to arrive at the recommended allowance.

kilograms was then multiplied by 115 calories to arrive at the recommended allowance.

In all cases, the estimated caloric intake was below the Recommended Dietary Allowances for children and youth set by the Food and Nutrition Board of the National Research Council in 1964. Only one child was on a restricted diet. He was to eat only bananas with oatmeal, strained veal and beef, and skim milk. His intake was not limited, however, and it should not have interfered with the amounts of these foods consumed.

The diets of three of the children included the four basic food groups during the week, but did not always consist of these groups everyday. Of the other two children, one did not receive cereals during the week her intake was recorded. The infant on the restricted diet was not allowed to have vegetables.

Two of the children were on dietary supplements or vitamins during the time of the study. The other three had stopped taking vitamins from one year to two months before the study began. Each child had been immunized at some time in his or her life, but three children's immunizations were not "up to date." This information is found in Table 4.

The caloric value findings were limited by the tool the researcher developed. The daily intake form was functional for only one of the mothers in the study sample. She

Table 4. Dietary Supplements and Immunization History*

Child	Dietary Supplement	Regularity of Administration	Duration	Presently Given	Immunizations
Girl A	Vitamins with floride	Irregular	6-12 months	No	Primary DPT
Girl B	Vitamins	Three times per day	6-12 months	No	Primary DPT Oral Polio
Girl C	Vitamins with iron	Once a day	6-12 months	No	Primary DPT Smallpox Oral Polio Measles
Boy A	Vitamins with iron	Irregular	1-6 months	Yes	Primary DPT
Boy B	Vitamins with iron and floride	Three times per day	1-6 months	Yes	Primary DPT Oral Polio

*Information obtained from the mothers during the interviews.

was a member of a white middle-class family. She had a college education and had kept intake forms previous to the initiation of the study.

The rest of the mothers in the study came from varying cultures and levels of society. Two mothers were Mexican-Americans. One of them had completed eighth grade, while the other dropped out of high school when in the tenth grade. Both were bilingual and were living on marginal annual incomes. Both were in their mid-twenties. The researcher does not think that these mothers saw the importance of keeping track of their children's daily intake.

The other two mothers in the study were Caucasian and spoke only English. One of them had completed high school and had recently become twenty years old. Her family's income was minimal and she had many problems which may have diverted her energies. She apparently completed the intake form to the best of her abilities and understanding.

The fifth mother was thirty-nine years old. She had completed eleventh grade, which she stated was equivalent to graduating from high school approximately twenty-five years ago. She was caring for a family of eight and as one member had recently been discharged from the hospital, she had many financial and emotional worries. She forgot to keep her child's intake during the day and she had filled in the food minus the amounts at night after dinner.

Recommendations for improving the dietary form are found in Chapter 5.

Findings Related to the Causes
of Failure-to-Thrive

The second aspect of this study was concerned with the determination of various underlying factors in the home which have resulted in a child's decreased food intake. The environments of the five children of the study population are discussed in brief case presentations.

Case Studies

Girl A

Girl A was ten months old when the researcher visited her home. She had been hospitalized for failure-to-thrive and had been discharged two months before the home visit was made. Girl A appeared to be happy. She was not afraid of strangers and laughed frequently when attention was paid to her. She was pale and thin. Her birth weight was nine pounds, five ounces, and at ten months she weighed approximately sixteen pounds. Her rate of development was delayed as she had difficulty sitting up by herself and had not begun to crawl. Her parents had not returned to a pediatric clinic since her discharge, as they said they were told not to bring her in unless she was ill.

There were four members in the family: a mother and father, Girl A, and her sister who was two years old. The mother was expecting a third child in four months. Both of the parents had completed high school and the husband was employed. His income ranged between \$2,000 to \$2,999 a year, and it came only from wages. He was eligible for veteran's benefits but wanted to "save them for a real emergency." The family was receiving food stamps immediately after Girl A had been discharged from the hospital as this was a condition for her release. Because of some misunderstanding, the family was no longer receiving food stamps at the time of the interview. The mother reported that they had little money for food and that the amount was further depleted by her husband's frequent purchases of beer.

This family lived in a mobile home in a rural, non-farm area. Their living quarters were small and cramped. The home was very warm at the time of the visit by the researcher, and the unit smelled of urine. There was no radio, telephone, nor television in this home.

The mother was concerned with hospital bills, although these were being paid by a public service agency. She had no diversions in the home and was fairly isolated as there was only one other family nearby. The mother gave the general appearance of being fatigued, pale, and she stated she was anemic. She expressed many concerns about

her third pregnancy, such as a fear of falling down if she went for a walk or being alone when labor began. She was not receiving any prenatal care at the time of this study.

This mother had many problems. Economic stress factors were evident. Her energies were being spent by being in a possible unhealthy prenatal state, by taking care of two children, and by trying to cope with fears related to her pregnancy. She summed up her relationship with her children at the end of the interview when she remarked, "It is so hard to love them both at the same time."

Girl B

This child was twenty months old. She lived with her foster mother and five-year-old foster sister in a small barrio dwelling. The child's "grandmother" and "great-uncle" were also living in the home. Her father came to visit her everyday, but she did not see her mother. The family income came from welfare payments and from Social Security. It totaled a little more than \$2,000 a year.

Girl B was small for her age. Her birth weight was five pounds, eight ounces, and her weight at twenty months was twenty-one pounds. She was pale, had dry hair, but was very active and playful. The mother-child interaction appeared to be good as the mother played with the child with

ease and the girl obeyed her willingly. The mother frequently was able to leave the house and take the child with her. The mother stated that having funds to buy food was a major problem for the family.

Girl C

Girl C was the sixth child in a family of eight people. Both of her parents were in the home, as were her five siblings. Girl C was four years, three months old and weighed thirty and three-fourths pounds at the time of the interview. She was an extremely shy girl and had difficulty remaining in the living room when the researcher was present. She refused to do any tasks to measure her development. Her mother reported that the girl suffered from daily enuresis during her nap and at night.

Both parents had completed eleventh grade. The mother was thirty-nine years old and the father was forty-one. The family income was in the range of \$9,000 to \$9,999, but there were many outstanding bills. The family had moved three times in the past year because of outside factors such as expansion projects. The mother stated that their present rent was too high, and that she was anticipating having to move again in the near future. One of her sons had been in a car accident that month and had been discharged from the hospital a week before the home visit was made. The mother had been hospitalized for a period of

time during the previous year. She expressed concern about how they would be able to pay the hospital bills. The mother also stated that she did not have enough money to buy food for her family, especially items such as milk, meat, and fruit. She asked for information on how to apply for food stamps.

Boy A

Boy A was nine and one-half months of age at the time of the study. He had been hospitalized for eight days prior to the study for gastroenteritis. He was discharged but returned to the hospital after four days at home and was hospitalized for two more weeks. The home visit was made one week after he was discharged the second time.

Boy A was the second of two children. He had a three-year-old sister. His birth weight was seven pounds, fourteen ounces and his weight at the time of the study was sixteen pounds, five ounces. This child constantly sucked on his tongue and has done so since birth. The researcher questioned this as being a self-stimulating activity.

The parents of Boy A had attended college and were in their late twenties at the time of the study. Their income was adequate to meet their needs. The home was in a suburban area and was kept neat and attractive. The mother was meticulous; the researcher found it interesting that

although the children had many toys, the objects were neatly placed on shelves and were not scattered about.

The mother reported that the father was rarely able to "get down on the floor" and play with the children. He spent most of his time pursuing "adult" activities. She was able to trace Boy A's feeding problems to a time when she was having difficulty meeting her daughter's needs and when conflicts between her and her husband were present. The mother stated that she was "frustrated" having to meet the needs of another child, plus trying to cope with an unstable marital relationship. During this period Boy A experienced a decrease in appetite. He began having diarrhea, vomiting occurred with feedings, and there was a subsequent weight loss.

Boy B

This infant was first seen by the observer while he was in the hospital with failure-to-thrive. He was a happy child but was substantially underweight. His birth weight was six pounds, five and one-half ounces, and his weight at nine months of age was fourteen and one-half pounds. Boy B was discharged the day after the researcher saw him at the hospital. He was placed in a new home as his mother had given him up for adoption. She had two other children, ages four and two, and no father was in the home. The home was unstable economically as well as having other stressful

factors present. The infant had received minimal stimulation and was rarely cared for by his mother. Relatives frequently tended to Boy B, but they had many children of their own and the child was often neglected. When the child was first admitted to the hospital, the staff thought he must have been grossly mentally retarded as he was apathetic, unresponsive, and had exaggerated developmental lags. The infant's new home was more stable financially and emotionally. He was receiving loving attention frequently, was eating well, and was beginning to thrive.

Conclusions

There were various stress elements in the homes of the children in the study. The predominant factor which appeared to be most related to growth retardation was the lack of funds to purchase food. The mothers could not offer their children food when there was little or none available.

Table 5 presents some of the causal factors for failure-to-thrive which were studied by other researchers and which were outwardly manifested in the homes this researcher visited.

Summary

The children in the study population ranged in age from nine months to four years, three months. Each child

Table 5. Factors Relating to Growth Failure

Child	Father Absent from Home	Marital Conflict	Economic Stress	Immature Person- alities of Parents	Minimal Environ- mental Stimu- lation
Girl A			x	x	x
Girl B	x		x		
Girl C			x		
Boy A		x			
Boy B	x		x	x	x

had a history of previous hospitalization. Three infants had recently been hospitalized for gastroenteritis and/or failure-to-thrive. The other two children had been hospitalized for other disease states at least six months prior to the initiation of this study. All of the children were underweight, but outward manifestations of severe malnutrition or dehydration were absent in every member of the population. None of the children were experiencing vomiting and/or diarrhea during this study.

Data received from the dietary intake form were not recorded in a precisely measurable form and therefore the data pertaining to caloric intake were not exact. Estimates of the caloric content of foods and fluids ingested by each child during a "typical" twenty-four hour period were made by the researcher. These data are not to serve as conclusive results but are to represent an approximation of food intake. All of the caloric estimates made for each of the children were below the Recommended Dietary Allowances for a child of their age and sex represented at the fiftieth percentile.

Failure-to-thrive and an inadequate food intake appeared to be related to stress elements in the children's environments. The mothers in this study defined these stress factors to be insufficient annual incomes, concomitant debts, and unstable marital relationships.

Inadequate environmental stimulation and insufficient nurturance resulted in failure-to-thrive in one case.

CHAPTER 5

DISCUSSION OF FINDINGS

This chapter compares the findings of this study to the conceptual framework and the review of literature presented in Chapters 1 and 2, respectively. Implications for nursing and recommendations for further study are also included in this chapter.

Application of Findings to the Conceptual Framework and Literature Review

The term failure-to-thrive is used to describe children who have symptoms of malnutrition, growth retardation, and sometimes delayed emotional development. All of the children in this study were underweight and were delayed in social and/or gross motor development, as measured by the Denver Developmental Screening Test. Each child had an estimated caloric intake below the Recommended Dietary Allowances for children of his or her age and sex. Although only two of the five children had previously been diagnosed as having failure-to-thrive, the other three also manifested signs of growth failure.

The reasons for a nonthriving state in children are many, but all seem to stem from one source. Stress

involving the mother-child relationship is the most generally accepted etiological factor underlying failure-to-thrive.

Stress is created when an organism is threatened. The degree of stress produced depends on the organism's ability to cope with the threat. Anxiety results if an organism is unable to deal with the stress-producing element or if the organism's usual methods of coping are blocked (Lazarus 1966).

One human source of stress and anxiety is the loss of a sense of security. Often this loss occurs from circumstances over which one has no or only partial control. External frustrations, such as economic and social pressures, may divert or deplete an individual's ability to cope with stress. A person may channel many of his energies to build defenses for dealing with stress. In doing so, one may lower his tolerance to other stress and neglect aspects in his environment, such as his responsibilities to others.

Stress and anxiety within the mothers of children with failure-to-thrive negatively influences the mother-child relationship according to Rhymes (1966), Elmer (1960), and Ribble (1965). The child responds to his mother's anxiety by becoming irritable and not eating. He experiences diarrhea, vomiting, and a sequential weight loss. Continued stress produces significant growth failure.

The mothers in this study reported that they had to cope with economic and/or emotional stresses. They were unable to totally respond to their children's needs for love and security, as their own needs were being threatened at the same time. Financial difficulties and marital problems diverted their energies so that they were not able to totally respond to their children. The mothers did not have funds to provide for their children or they were concerned with emotional problems in the home. Their continued frustration may have been communicated to their children, who in turn suffered a loss of security. The mothers' stressful situations, economic factors, and in one case an infant's reaction to stress, resulted in a decreased caloric intake. All five of the children displayed only minor symptoms of failure-to-thrive at the time of this study. However, prior to this research, the physical conditions of three of the infants were so severe as to require hospitalization. Stress and anxiety produced from unresolved economic and emotional conflicts were still present in two of these infants' environments after they were discharged. The third was placed in a foster home.

In conclusion, the inadequate caloric consumption of the children in this study was apparently related to stress factors in their environments. Each mother in this study reported that the economic and/or emotional stress

elements in her environment influenced her abilities to meet her child's needs.

Nursing Implications

This study revealed some implications for nurses who work in hospitals and for those who function in public health settings.

First, there is a need for an interdisciplinary team approach to help alleviate some of the elements which may be producing stress in a family. An example of such intervention occurred with the family of Girl A. After the final data was gathered from the mother, the researcher contacted the child's physician and nurses in the hospital. The doctor was informed that the family had not been keeping clinic visits in another medical setting and he was given the reason why they were not being kept. The medical social worker was also contacted and was told the family was not receiving food stamps and that they had not been visited by a public health nurse, even though a referral had been made.

This team, composed of doctors, nurses, and the medical social worker, helped to relieve some of the stress factors in Girl A's family. They are now receiving food stamps. The father, with help, found a higher paying job that he likes. A public health nurse is visiting the home, and the mother and children are attending prenatal and well-baby clinics respectively.

The team approach takes time, effort, and coordination, and it will not be functional if there is no follow-up over a period of time. However, this approach to comprehensive health care delivery may be invaluable in alleviating stress elements in the home, thereby reducing a child's repeated hospitalizations for failure-to-thrive.

A second implication for the nurse is that she consider growth and development aspects of health when she sees a child in a health care setting. She can easily perform a Denver Developmental Screening Test or some other test to measure the child's development. The nurse can then observe the child's patterns of growth and development over a period of time.

Many avenues are open to the nurse who works with mothers and families of children who fail to thrive. Opportunities to lend emotional and operational support, such as assisting with budget planning, are open in any setting.

Recommendations for Further Study

Nursing research of the nutritional, psychological and environmental aspects of failure-to-thrive is minimal. Most studies have been concerned with the psychological implications of disturbed mother-child relationship or with other emotional factors of growth retardation.

This researcher suggests that more investigation be conducted concerning the nutritional and environmental components of failure-to-thrive. Further attempts should be made to measure the nutritional intake of these children and to assess the degree of stress present in their environments.

The findings related to the measurement of caloric values of foods were not exact or conclusive because the measurement tool, the daily intake form, was not explicitly designed. Any tool which may be developed in the future to measure nutritional values should have exact directions as to its use. The tool must have a cross-cultural design so that it may be functional and be understood by mothers of any culture and of any educational background.

Any further nutritional research should include a standardization for the measurement of foods and liquids. Bowls and cups the children use need to be measured before the study begins. The researcher should also decide such details as whether a tablespoon of food is to be defined as a level tablespoon. She must also help the mothers differentiate among the sizes of such foods as eggs because there are many variations from large to small.

This investigator would like to see more research conducted which would measure the stress factors in a home. A researcher concerned with environmental stress could use

an anxiety scale questionnaire or some similar tool to measure stress. A comparative study investigating the anxiety a child with failure-to-thrive experiences in a hospital environment as opposed to that which he may experience in his home might render some valuable information.

In summary, recommendations for further nursing research include:

1. Investigation of the nutritional status of children with failure to thrive;
2. Construction of a tool which would specifically measure the nutritional values of foods consumed by children with failure to thrive;
3. Development of such a tool which would not discriminate as to culture or educational level;
4. Investigation of a nonthriving child's anxiety level in the home as contrasted to that which is present in a hospital setting;
5. Experimental study which specifically measures stress the mothers of children with failure-to-thrive experience.

CHAPTER 6

SUMMARY

This chapter is a summary of the study described in the previous five chapters. The purpose of this research, the methodology used in collecting data, findings, and conclusions are presented.

Purpose of Study

The purpose of this study was to further knowledge about the nutritional aspects of failure-to-thrive. Specifically, the research attempted to measure a nonthriving child's daily caloric food consumption to see if it was sufficient to promote growth. An attempt also was made to identify any factors which may have been producing or may have been resulting in an insufficient caloric intake. The problems which were researched were: Do children with failure-to-thrive have a caloric intake which will promote growth? If not, what are the underlying factors influencing their food intake?

These problems are significant (1) because the answers may affect the way a nurse will respond to the mother, family and child with failure-to-thrive, and (2) so that each case of failure-to-thrive will be evaluated

individually, and the reasons given for a child's mal-nourished condition will not be stereotyped.

Methodology

The researcher interviewed the mothers of children with failure-to-thrive in their homes. The instruments used in each interview consisted of:

1. A physical assessment form used to evaluate a non-thriving child's outward physical condition;
2. The Denver Developmental Screening Test, a tool to determine developmental delays in children from birth to six years of age;
3. A questionnaire to gain information about a child's past dietary history, immunization status, and about previous illnesses and hospitalization;
4. A form which gathered information related to a child's intake and feeding patterns;
5. A questionnaire designed to gather data about the socio-economic status of each family;
6. The daily dietary intake form developed by the researcher, which was used to gain data for the measurement of the caloric value of foods ingested by children with failure-to-thrive.

The sample population for this study consisted of five children, two boys and three girls who met the following criteria:

1. They were gaining in weight and height at rates at the tenth percentile or less.
2. Their growth retardation and state of malnutrition was not present due to any organic disorders or factors.
3. They were between the ages of one month to five years.
4. Their mothers were literate in English and were willing to participate in this study.

Findings

The questions of this study asked if children with failure-to-thrive had a caloric intake which would promote growth; and if they did not, what the factors were which influenced their food intake.

Unfortunately, the data about the caloric consumption of each child was not complete. The directions on the daily intake form were not explicit and measurements of the bowls and cups each child would be using were not taken. Since the amounts of foods entered on the intake form could not be measured accurately, the researcher estimated the caloric values of foods ingested by each child for a "typical" day. These estimates were not to serve as conclusive data but were to represent an approximation of food intake. All of the children in the study sample had an estimated caloric intake below the Recommended Dietary

Allowances for a child of their ages and sex represented at the fiftieth percentile.

Each of the mothers in the study spontaneously reported factors which she believed were influencing her abilities to meet her child's needs. These factors included:

1. Annual incomes which were insufficient as there was little food available to the family;
2. Outstanding debts concomitant to inadequate incomes;
3. Marital difficulties plus the "frustrations" of caring for another child;
4. The difficulty and apparent inability to love more than one child at the same time.

Data concerned with the physical status of each child showed that every child in the study sample was underweight. Two of the children's height and weight measurement statistics were at the tenth percentile of children of their age and sex. Two others were at the third percentile, and one infant was below the third percentile. Two children exhibited minimal signs of malnutrition, such as having dry hair and skin. Manifestations of severe malnutrition or dehydration were absent in every member of the population. None of the children were experiencing vomiting and/or diarrhea during this study.

Data obtained from the use of the Denver Developmental Screening Test showed that all of the children were delayed in social development. Two of the infants had developmental lags in the gross motor area of development. One girl was behind in language development.

Conclusions

The nutritional findings of this study were inconclusive but inferred that children with failure-to-thrive may have a caloric intake below the Recommended Dietary Allowances. This occurrence may be related to factors which were creating stress and anxiety in a child's environment.

Data collected about the children showed that all of them were delayed developmentally in at least one area of development. Each child in the study was underweight and two exhibited signs of malnutrition, such as having dry hair and skin.

Recommendations for future related nursing research include:

1. Investigation of the nutritional status of children with failure-to-thrive;
2. Construction of a tool which would specifically measure the nutritional values of foods consumed by children with growth failure;

3. Development of such a tool which would not discriminate as to culture or educational level;

4. Investigation of a nonthriving child's anxiety level in the home as compared to that anxiety which he experiences in a hospital setting;

5. Experimental study which specifically measures the stress experienced by the mothers of children with failure-to-thrive.

APPENDIX A

CONSENT FORM

I agree to participate in a study conducted by Susan Arnns, R. N. This study will be concerned with why some children have difficulty maintaining weight, or have a nutritional problem for various reasons, such as diarrhea or vomiting. I understand that Miss Arnns will be visiting me and my child at home over two weeks' time. I also understand that all information I tell her is confidential and that neither my name or initials (nor my child's) will be used in any kind of report she might make.

Consent _____

Witness _____

APPENDIX B

MEASUREMENT INSTRUMENTS

The following questionnaires were adapted from the United States Department of Health, Education and Welfare, Screening Children for Nutritional Status, Rockville, Maryland, 1971, pp. 8-18.

Physical Appearance of the Child*

Name _____

Height _____ ins. Head circumference _____ cms.

Weight _____ lbs.

- | | |
|---|---|
| <p>1. HAIR
 Dry Yes ___ No ___
 Dyspigmented Yes ___ No ___
 Brittle Yes ___ No ___
 Shiny Yes ___ No ___</p> | <p>7. FINGERS AND NAILS
 Clubbed Yes ___ No ___
 Spooned Yes ___ No ___
 Ridged Yes ___ No ___
 Combinations _____</p> |
| <p>2. EYES
 Sunken Yes ___ No ___
 Staring Yes ___ No ___
 Bloodshot Yes ___ No ___
 Inflamed Yes ___ No ___</p> | <p>8. SKIN
 Dry or scaling Yes ___ No ___
 Echymosis Yes ___ No ___
 Turger _____</p> |
| <p>3. LIPS
 Angular lesions Yes ___ No ___
 Cheilosis
 (Bleeding) Yes ___ No ___
 Stomatitis (Inflam.
 of mouth) Yes ___ No ___</p> | <p>9. ABDOMEN
 Pot belly Yes ___ No ___
 Hepatomegaly
 Yes ___ No ___</p> |
| <p>4. TEETH
 Visible caries Yes ___ No ___
 Debris Yes ___ No ___
 Calculus Yes ___ No ___</p> | <p>10. LOWER EXTREMITIES
 Pretibial edema
 Yes ___ No ___</p> |
| <p>5. GUMS
 Marginal redness or
 swelling, Local ___ Diffuse ___
 Bleeding gums Local ___
 Diffuse ___</p> | <p>11. SKELETAL
 Sunken fontanels
 Yes ___ No ___
 Breeding of ribs
 Yes ___ No ___
 Bowed Legs Yes ___ No ___
 Epiphyseal enlarge-
 ment of wrists
 Yes ___ No ___
 Bossing of skull
 Yes ___ No ___
 Winged scapula
 Yes ___ No ___</p> |
| <p>6. TONGUE
 Geographic Yes ___ No ___
 Fissures Yes ___ No ___
 Glossitis Yes ___ No ___
 Swellings Yes ___ No ___</p> | <p>12. IMPRESSIONS
 Skinny Yes ___ No ___</p> |

*p. 18.

12. IMPRESSIONS--Continued

Fat Yes No

Neither

Color

Apathetic Yes No

Irritable Yes No

Both Yes No

Aware of

environment Yes No

Date of exam

Comments:

Information About the Child*

Name _____

Address _____

Birth date _____

Sex: M _____ F _____

Birth weight _____

Birth order _____

Multiple birth Yes _____
No _____

Feeding 1st year

DURATION (months)

0 1 1-3 3-6 6-12

Breast

Iron fortified formula

Other formula

Other milk, specify

Dietary Supplements

DURATION (Months)

0 1-6 6-12 12-24 Now

Vitamins

Vitamins with iron

Vitamins with floriide

Vitamins with iron and
floriide

Regularity of administration _____

Immunizations

Walked alone at _____ months

DPT, primary series Yes No

DPT, DT or tetanus Yes No

Smallpox Yes No

Oral polio Yes No

Measles Yes No

German measles (rubella) Yes No

Mumps Yes No

Serious illnesses:

Hospitalizations (Age, time in hospital, illness): _____

Ill now? Nature of illness _____

*pp. 10-11.

Food Intake*

1. Does child eat at regular times each day? _____
2. How many days a week does he eat:
 A morning meal _____ Lunch or mid-day meal _____
 An evening Meal _____ During the night _____
 (Formula for infant) _____
3. How many days a week does he have snacks?
 In mid-morning _____ In the afternoon _____
 In the evening _____ During the night _____
 (Formula for infant) _____
4. Does he usually eat with the family? _____
 Which meal? Breakfast _____ Noon meal _____ Evening meal _____
5. How many times does he eat at school? _____
6. Would you describe his appetite as:
 Good _____ Fair _____ Poor _____
7. At what time of day is he most hungry?
 Morning _____ Noon _____ Evening _____
8. Does he(she) dislike any foods? _____ If so, what? _____
9. Is he(she) on a special diet? Yes ___ No ___ Why? _____
10. Has child been on a special diet within the past year?
 Yes ___ No ___ Why? _____ (Reason)
11. Does child eat anything which is not usually considered food? Yes ___ No ___ If so, what? _____ How often? _____
12. Can child feed himself? Yes ___ No ___
 With fingers? _____ With a spoon? _____
13. Does child drink from a bottle with a nipple? Yes ___
 No ___ How often? _____ At what time?(day or night) _____
14. Does child use a cup or glass by himself? Yes ___ No ___
15. Activity reported by mother (active, lethargic etc.):

16. Does vomiting occur with feedings? Yes ___ No ___
Frequency _____
17. Does child experience diarrhea frequently? _____
18. Does the child frequently refuse foods that are
offered? _____ What foods? _____
19. What do you think the child should be eating? _____

20. Mother's reported feelings about the child:
_____ (Demanding? ___ Normal? ___ Too quiet? ___)

21. Activity of child reported by observer: _____

22. Observed response of child to parent(s): _____

23. Observer's comments or observations: _____

Information About the Family*

Name _____

Date _____

Father in home? Yes	No	Age	Race
Father surrogate Yes	No	Age	Race
Mother in home? Yes	No	Age	Race
Mother surrogate Yes	No	Age	Race

Languages spoken _____

Education: (Highest grade completed) Family Income

Mother	Father	Below \$1000
_____ 1-3 _____	_____	1,000-1,999 _____
_____ 4-6 _____	_____	2,000-2,999 _____
_____ 7-8 _____	_____	3,000-3,999 _____
_____ 9-11 _____	_____	4,000-4,999 _____
_____ HS _____	_____	5,000-5,999 _____
_____ Att. Col. _____	_____	6,000-6,999 _____
_____ CG _____	_____	7,000-7,999 _____
_____ Don't know _____	_____	8,000-8,999 _____
		9,000-9,999 _____
		10,000-14,999 _____
		15,000-19,999 _____
		Over 20,000 _____

Is family, or a member:		
Receiving donated foods Yes	No	
Participating in food stamps? Yes	No	
Participating in supplemental foods? Yes	No	From wages and salaries _____
Receiving free or at reduced cost: Lunch at school Yes	No	Social Security _____
		Welfare _____
Lunch at day care? Yes	No	Insurance payments _____
		Veteran's benefits _____
Lunch at Head Start? Yes	No	Pensions _____
		Support from others _____
		Number of persons supported by income _____
		Number of children under nine years supported by income _____

Who prepares the meals? _____

Who is responsible for feeding the children _____

Does home have a working stove? Yes No Oven? Yes No

Does home have a refrigerator? Yes No

Home location: Urban _____ Suburban _____ Rural _____ Nonfarm _____

Foods eaten by _____ during the week of _____

Please list all foods and liquids taken by your child during each 24 hour period. Approximate amounts should be included by each item. Example: Milk--1 cup; hamburger--1 small pattie; formula--3 ounces; beans--1 tablespoon.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Morning							
Mid-morning							
Noon							
Mid-afternoon							
Evening							
Bedtime and night							

APPENDIX C

DAILY DIETARY FORMS

The following charts are typed copies of the dietary forms completed by the mothers in this study. The types and names of foods entered have been reported verbatim, so that any misspellings or cultural connotations have been included.

Foods eaten by Girl A during the week of _____
 Please list all FOODS and LIQUIDS taken by your child during each 24 hour
 period. Approximate amounts should be included by each item. Example:
 milk--1 cup, hamburger--1 small pattie, formula--3 ounces, beans--1 tablespoon

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
MORNING	A jar--half of each--Banana pudding & cereal egg-yolks & bacon	Milk one 8 oz bottle	Bowl of cereal & part of a jar of cherry vanilla pudding	Bowl of cereal & cherry vanilla pudding--part of it	1 8 oz bottle of milk	1 bowl full of cereal, half a jar of fruit	1 bowl full of cereal & some jello & part of a jar of pears
MID-MORNING	Milk full 8 oz	A jar of food of vegetables ham and bacon	A bottle of Kool-aid	Some milk 3 oz not very hungry	Nothing	Milk--8 oz bottle & some dry bread it was combined with mid-morning	1 bottle of milk combined
NOON	hamburger part of it	I don't know cause I was gone & left her with Babysitter	Peanut butter sandwich & milk	Nothing		and noon meal so she really wasn't hungry	Nothing at all really
MID-AFTERNOON	Nothing	Nothing	More Kool-aid 1 bottle	Some cocunut cream pudding) teething cookies water & part of peanut butter sandwich	Teething cookies & a cup of water	Teething cookies & a bottle of milk & a hot dog, part of one	Nothing
EVENING	Same as the morning meal Half a jar of the fruit & cereal	A half a jar of carrots & bannana some water	1 jar of carrots what was left & part of vegetables & ham bacon, almost a jar of cherry vanilla pudding	A jar of vegetables & ham with bacon, & potato salad, half a jar of vanilla custard pudding	Half jar of cereal egg yolks & bacon half jar of peaches	Half jar of carrots & half a jar of fruit of pears	Half a jar of sweet potatoes & half a jar of pears & cookie
BEDTIME AND NIGHT	Milk full 8 oz	Teething cookies 6 oz of milk of a bottle	Milk full 8 oz	3 oz bottle of milk--she wasn't very hungry	A bottle of milk	Bottle of milk & some jello	Bannana & milk--a bottle

Foods eaten by Girl B during the week of _____
 Please list all foods and liquids taken by your child during each 24 hour
 period. Approximate amounts should be included by each item. Example:
 milk--1 cup, hamburger--1 small pattie, formula--3 ounces, beans--1 tablespoon

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
MORNING				1/2 cup orange juice 1 egg	1 bt. 8 oz	1 bot 8 oz	2 bts 8 oz each
MID- MORNING				1/2 carrot 1 bottle 3 oz 1 egg	1 bowl cheese & potatoes soup 1/2 bowl lentils 1/2 glass water	1 bowl of chicken noodle soup 1/2 glass water	1 egg 1/2 glass milk 1 strip bacon 1/2 glass water
NOON				1 bt. 4 oz			
MID- AFTERNOON				1 apple 1 slice cheese			
EVENING				1 bowl of lentils 1 bowl Jello 1/2 an apple 2 bowls potato & cheese soup	Potato salad Pork n Beans Steak	Meat loaf peas mashed potatoes 1 glass water	Forgot
BEDTIME AND NIGHT				1/2 cup soda	1 bt. 8 oz	1 bt. 8 oz	

Foods eaten by Girl C during the week of _____
 Please list all foods and liquids taken by your child during each 24 hour
 period. Approximate amounts should be included by each item. Example: milk--
 1 cup, hamburger--1 small pattie, formula--3 ounces, beans--1 tablespoon.

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
MORNING				2 bowls cereal 1 fried egg	donut and milk	bowl cereal sausage milk	sausage, 1 eggs
MID- MORNING				no snack	cheese nibbles Kool-aid	chicken noodle soup milk raisins	no snack
NOON				egg salad creamed corn milk	hot dog choc. milk		peanut butter sandwich and milk
MID- AFTERNOON				no snack	no snack	no snack	no snack
EVENING				Raviolis and pickle, butter and bread, ice cream Kool-aid	spaggetti and meatballs applesauce and milk	Fish sticks potatoes corn milk	chicken potatoes salad strawberries
BEDTIME AND NIGHT				no snack	no snack	no snack	no snack

Foods eaten by Boy A during the week of _____
 Please list all foods and liquids taken by your child during each 24 hour period. Approximate amounts should be included by each item. Example:
 milk--1 cup, hamburger--1 small pattie, formula--3 ounces, beans--1 tablespoon

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
MORNING	3/4 C. bananas (1 1/2 jars) w/ oatmeal 6 oz skim milk Stool, yellow mush 1 tsp. Donnagel PG	3/4 C. = 1 1/2 jar bananas w/oatmeal 1 Tsp. DPG	1 3/4 jars bananas w/oat- meal 5 oz. skim milk Stool, brown, solid and sticky	8 oz S.M. 1 jar bananas w/oatmeal Stool--brown sticky, 1/2 tsp DPG	S.M. 8 oz oatmeal & Banana 3/4 cup Stool--solid	S.M. 8 oz Ob 1/3 cup (oat- meal & bananas) Stool--yellow mush & seedy	S.M. 8 oz Ob--1/2 cup 1 tsp Donna- gel PG, Stool--yellow mush
MID- MORNING	2 oz skim milk Stool--small, solid, yellow	8 oz skim milk Stool--brown solid	Stool--brown, small, sticky	1 stool--brown sticky; 2 jars bananas w/oat- meal; Stool-- brown sticky	8 oz S.M. Stool--mush		S.M. 8 oz
NOON	1 1/2 jars bananas w/oat- meal, 6 oz S.M. 1 jar veal (less 2 tspns) Stool-- solid, small 1 tsp DPG	2 jars bananas w/oatmeal 1 1/2 jrs beef Stool--yellow, mush-solid	2 jars bananas w/oatmeal 2 jars beef .06 DecaViSol	5 oz S.M. 3/4 jar bananas w/oatmeal 2/3 jar beef	6 oz S.M. oatmeal & banana 1/2 cup veal--4 tblspns	OB--1/3 cup lamb--1/2 jar SM--8 oz .03 ml Deca ViSol	1 1/2 jar bananas oat- meal to thicken, 7 oz SM & 3/4 cup Stool--yellow mush, .02 Deca
MID- AFTERNOON	.03 DecaViSol 8 oz S.M. (skim milk) Stool--yellow mush	.04 DecaViSol 1/2-tsp DPG 8 oz S.M.	Stool-solid, brown, sticky 6 oz. S.M.	3/4 jar bananas w/oatmeal 1 jar lamb	8 oz SM Stool 1. yellow, big solid; 2 liquid	S.M. 6 oz 2 2 oz. Stool--yellow liquid	Stool--yellow 1 tsp Donna- gel PG 6 oz SM
EVENING	2 1/2 jars banan- as, w/oatmeal 1/2 jar beef Stool--sm. yellow mush	2 jars bananas w/oatmeal 1 jar lamb Stool--brown, sm. sticky 1/2 tsp DPG	1 3/4 jars bananas w/oat- meal 1 jar veal Stool--brown, sm. sticky	1 1/2 jars bananas w/oat- meal 3/4 jar beef	oatmeal & banana 1/2 cup 2 tspns Donnagel Stool--liquid yellow	OB--1/2 cup SM -- 8 oz	1 2/3 jars bananas w/ oatmeal 4 oz S.M. 1 tsp Donnagel
BEDTIME AND NIGHT	1 tsp DPG 8 oz skim milk	8 oz. S.M. Stool--brown, sm. sticky	Stool--brown sticky; 5 1/2 oz S.M., 3/4 tsp DPG	6 oz S.M.	7 oz SM 1 tsp Donnagel 8 oz SM	SM - 5 oz Stools--yellow liq. 1 tsp Donnagel	4 oz S.M. 1 tsp Donnagel

Foods eaten by Boy B during the week of _____
 Please list all foods and liquids taken by your child during each 24 hour
 period. Approximate amounts should be included by each item. Example:
 milk--1 cup, hamburger--1 small pattie, formula--3 ounces, beans--1 tablespoon

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
MORNING			Milk 8 oz Cereals 1/2 eggs	Milk 8 oz egg 1/2 cereal	Milk 8 oz Chicken Banano Crome of wheat	Crom of wheat Banana 1/2 egg	
MID- MORNING			Banano 1/2 with milk	Cookies milk 4 oz	Cookies Milk 4 oz		
NOON			Vegetables and beef Junior dinner Milk 8 oz	Potados and meat	Junior dinner Vegetables and beef		
MID- AFTERNOON			Cookies and small orange juice	Cookies orange juice	Cookies and milk bananos		
EVENING			Milk 4 oz beets mach. potatos squash	Carrots leaver mach potados milk 4 oz	Carrots meat potados milk		
BEDTIME AND NIGHT			Milk 8 oz cookies	Cookies orange milk 8 oz	Milk 8 oz orange juice		

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