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To the Graduate Council:

I am submitting herewith a thesis written by Anita Weinbren Miller entitled "Public Health Nutrition Field Experience with the Sullivan County, Tennessee, Health Department in 1972." I recommend that it be accepted for nine quarter hours of credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Nutrition.

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PUBLIC HEALTH NUTRITION FIELD EXPERIENCE WITH THE
SULLIVAN COUNTY, TENNESSEE, HEALTH DEPARTMENT
IN 1972

A Thesis
Presented to
the Graduate Council of
The University of Tennessee

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

by
Anita Weinbren Miller

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A. W. M.

ABSTRACT

This thesis is based upon observations and experiences during seven weeks of field training with the Nutrition Division of the Sullivan County Health Department in Tennessee. The purpose of the field training was to supplement academic training in public health nutrition at the University of Tennessee.

The field experience and the preparation of this report provided an opportunity for the student to evaluate the health needs of Sullivan County and to observe the public health program, particularly the public health nutrition program, that had been planned to meet those needs. Information was obtained on the history of Sullivan County and the Sullivan County Health Department, on the vital and biostatistics, and on the socioeconomic, political, and educational characteristics of the population in an effort to examine the health needs and other factors which determine the policies and programs of the field agency. Through orientation conferences with the Health Officer, the Public Health Administrator, supervisors, and other personnel in the various divisions of the health department and through observation and participation in program activities of the field agency, the student's understanding of the contributions of each division to the total public health program and each division's interrelationship with the Nutrition Division was increased. The opportunity to visit with personnel in many of the allied agencies located in Sullivan County and/or to examine their programs increased awareness of services provided by community and state agencies.

Experiences of providing nutritional services to individuals and groups, both professionals and nonprofessionals, through counseling and guidance of individuals, conducting classes and a workshop, giving a talk, and other methods increased self-confidence. Involvement in the planning, development, and execution of a study of nutrition in the Sullivan County Head Start Program provided an opportunity for working with other professionals in the community. It also provided for professional growth by increasing the student's competency in the assessment of problems and the development of activities and evaluation procedures which are related to the program planning process. Critical self-assessment of performance in the Head Start project and in providing other nutritional services also promoted personal growth and development.

The field training allowed the student to apply the knowledge that she had acquired in academic training to the work situation. Understanding and appreciation of the Nutrition Division and its relationship to the other divisions and to the health department as a whole were developed. Moreover, the field training increased her professional competency as a public health nutritionist.

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CHAPTER I

INTRODUCTION

As health care in the United States has come to be regarded as a human right of every individual, and not merely a privilege to be enjoyed by a fortunate few, the demand for health services and the demand for manpower to supply these services have increased. In 1967 there were about three and one-half million people employed in the health occupations--approximately ten times the number of individuals that were employed in health occupations at the turn of the century. By 1975 there will be a need for more than five million people to be employed in health occupations, including a need for 17,000 more dietitians and nutritionists to fill positions in the medical and health services industry than the 30,000 employed in 1966. Of the 17,000 new positions, an estimated 9,000 will be replacement positions because of retirement, attrition, or death, and 8,000 will be new positions (1, 2).

To help supply the needed health manpower to provide health services, educational and financial resources have been expanded (1). The University of Tennessee is one of the universities helping to meet this health manpower need through the Master's Program in Public Health Nutrition. An integral aspect of this program is the field experience in a public health agency that provides an opportunity for the student nutritionist to apply the principles, knowledge, and skills learned.

Prior to the field experience in the Sullivan County Health Department in Tennessee, the student identified objectives for the field experience. They were:

1. To develop an increased understanding of the public health profession and its philosophy.
2. To strengthen her identification with the public health profession.
3. To increase her understanding and appreciation of the nutrition services and program within a public health agency through working with a public health nutritionist in the performance of her daily activities.
4. To apply the knowledge, principles, and skills from her academic program to real life situations that occur in the health agency, including cooperation with health agency personnel, as well as personnel in allied agencies.
5. To increase her competence through personal involvement in the planning, development, and execution of activities with and for individuals and groups, including professionals and nonprofessionals.
6. To promote personal growth and development through critical self-assessment of performance and understandings in the field of public health.

On the pages that follow, the history of Sullivan County and the Sullivan County Health Department and characteristics of Sullivan County, its demographic data and its health programs, are reviewed. An analysis of the experiences and observations of the student during her field experience in the Spring of 1972 in the Sullivan County Health Department is reviewed, including a study of nutrition in the Sullivan County Head Start Program.

CHAPTER II

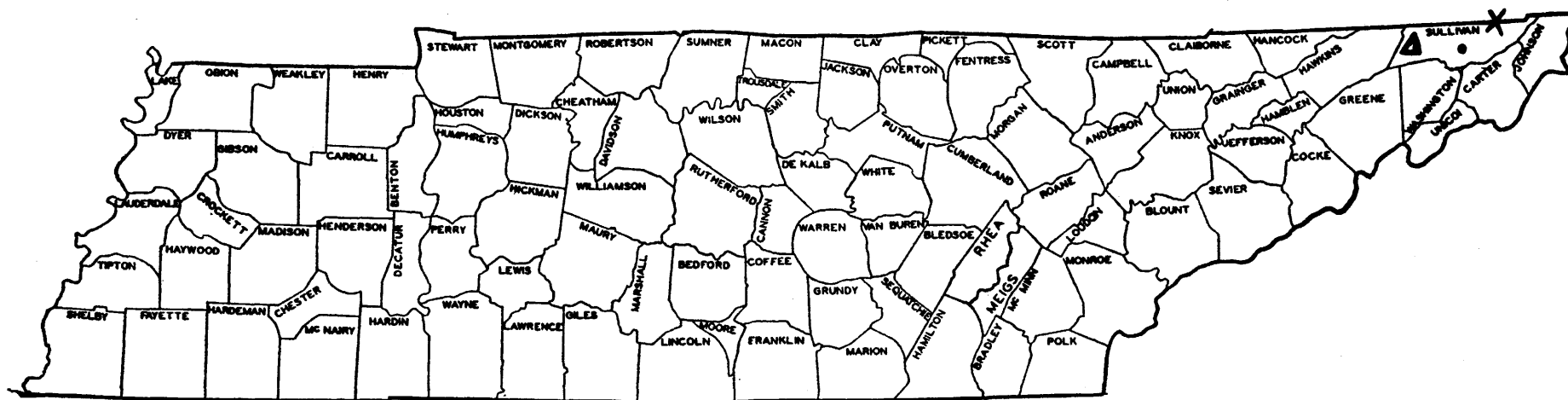
FACTORS WHICH DETERMINE THE POLICIES AND PROGRAMS OF THE SULLIVAN COUNTY HEALTH DEPARTMENT

The Sullivan County Health Department is concerned with promoting public health. It is specifically concerned with preventing disease, promoting good health and efficiency, and prolonging life of the inhabitants of Sullivan County. In order to develop services and programs that are effective in meeting the health needs of the people, it is necessary to have a knowledge of the needs and characteristics of the population of the county. A consideration of the history of the county and its health department, the vital and biostatistics, and the economic, social, political, and educational characteristics of the population provide an insight into those factors that are important in determining the programs and policies of the Sullivan County Health Department.

I. HISTORY

Sullivan County is in upper East Tennessee and has as its boundaries the state of Virginia and the Tennessee counties of Johnson, Carter, Washington, and Hawkins. The three cities in which the centers of the Sullivan County Health Department are located are indicated on the map. Refer to figure 1.

With the exception of a small strip of land that was considered a part of Washington District, Tennessee, Sullivan County, Tennessee, was once claimed by Virginia and recognized as being a part of that state.



- X Bristol
- Blountville
- ▲ Kingsport

Fig. 1 Location of Sullivan County and the Sullivan County Health Department centers.

In 1779 Sullivan County was established as the second county in Tennessee by the state of North Carolina after a survey had shown that this land was in Tennessee and not in Virginia. The county was named for General John Sullivan (3, 4).

The history of the Sullivan County Health Department began in 1926, when action was taken by some progressive individuals in Sullivan County to establish a health unit. Subsidies were obtained from the Tennessee Department of Public Health, whose policy was the decentralization of available funds for promoting public health. The state health department gave assistance to counties, such as Sullivan, that desired to improve the level of health services within their boundaries. In January, 1928, the Sullivan County Court and the cities of Kingsport and Bristol appropriated funds. In April, 1928, the Sullivan County Health Department came into existence to educate the people of the county about their health needs and problems and to promote better health for the people (5).

In 1928 Sullivan County had a population of 43,382 (6). The health department was housed in two basement rooms of the Sullivan County Courthouse. A physician, a nurse, a sanitary inspector, and a clerk composed the original staff. The staff was challenged with the personal and environmental health problems of that time, which included a smallpox epidemic and a high prevalence of typhoid fever. Bacillary dysentery was rampant during the summer, causing unusually high infant mortality. Poor sanitary methods for disposal of sewage in the thickly populated suburban areas were hazards to the health of the people. In the incorporated cities, particularly Bristol and Kingsport, public health safeguards

had been taken to protect the water supplies, but these measures were inadequate during emergencies (5).

In 1931 the Commonwealth Foundation began contributing funds, in addition to the funds appropriated by Sullivan County, Bristol, and Kingsport, to support the health department (5). The Commonwealth Foundation, a philanthropic organization of New York, had as one of its objectives the development of progressive and sound public health services, particularly the development of health services at the local level. At that time in history, almost half of the Commonwealth Fund's income was being spent to encourage rural public health and rural hospitals. The major purpose of these endeavors was to set practicable standards in public health services and to aid particular communities, and others wishing to follow their example, to approach or to attain these standards. Tennessee was one of five states selected by the Commonwealth Fund to have demonstration projects, and in 1930 Sullivan County Health Department was chosen as a five-year demonstration project (7, 8).

Though the health department already had an organized program, special difficulties in coordination existed in Sullivan County because small industrial cities and open farmland were juxtaposed upon each other. The demonstration project's objective was to achieve more effective health services through careful planning, coordination, and intensification of efforts. Monies obtained from the Commonwealth Fund were used early in the demonstration years to construct a building to house the health department. In the Tennessee Department of Public Health, a field unit was established to provide consultation and technical advisory services to health agencies at the local level. Commonwealth Fund monies were matched

by local and state funds for the demonstration period. Upon the termination of the five-year demonstration period, the Commonwealth Fund gave the building to Sullivan County (7).

Dr. Moore, the director of the Sullivan County Health Department in 1936, made the following statement:

The problems at the beginning were many. The people needed to be educated to the point where the necessity of carrying out measures for their own protection would be considered desirable. . . . This was pioneer work; haste would not attain the desired results. We began to move slowly and built a firm foundation. The structure developed on that foundation will, I think, survive the storm (5).

Through the course of history, Sullivan County has developed from being a piece of land claimed by Virginia to being presently the fifth largest county in terms of population in Tennessee (3, 9). From its beginning as a two-room office in the basement of the Sullivan County Courthouse with a public health team of four members, the Sullivan County Health Department has expanded to include three health centers in Sullivan County and a staff of approximately 50 people (5, 10).

II. DEMOGRAPHIC DATA

Vital and Biostatistics

A comparison of 1970 decennial census figures for Tennessee and Sullivan County shows that there was a greater percentage increase in the population in Sullivan County from 1960 to 1970 than there was for the state. From 1960 to 1970, Sullivan County's population increased 11.6 percent, from 114,139 to 127,329; and Tennessee's population increased from 3,567,089 in 1960 to 3,923,687 in 1970, a 10 percent increase. There was a decrease in the percentage of net migration from 1960 to 1970 for

both the county and the state, with Sullivan County having a 2.0 percent decrease and Tennessee having a 1.3 percent decrease (11).

A comparison of 1970 decennial census figures in respect to components of the population shows that nonwhites represent 16.1 percent of the Tennessee population and only 2.1 percent of the Sullivan County population. Tennessee has a larger percentage of people under 18 years of age and 65 years of age and older than does Sullivan County. In Sullivan County, 8.7 percent of the population is under five years of age, 33.2 percent is under 18 years of age, 59.1 percent is 18-64 years of age, and 7.8 percent is 65 years of age and older. The median age in Tennessee is 28.9 years and 28.8 years in Sullivan County (9).

A comparison of other 1970 decennial census figures shows that Sullivan County's fertility ratio is 334, as compared to 338 for the state. A larger percentage of the males and females 14 years of age and older are married in Sullivan County, as compared to Tennessee. In this age group, 72.8 percent of the males and 66.7 percent of the females in the county are married. In Tennessee 67.8 percent of the males and 62.5 percent of the females are married (9).

Table 1 shows the overall comparison of birth and death statistics for Sullivan County, Tennessee, and the United States. Sullivan County has the lowest rate in all instances of comparison to the state and national rates. Table 2 presents a comparison of the ten leading causes of death in the United States, Tennessee, and Sullivan County for 1969. The leading causes of death for Sullivan County reflect the state and national trends of increasing deaths from chronic illnesses (12, 13, 14).

Birth, total death, fetal, neonatal, and infant death
rates for Sullivan County, the state of
Tennessee, and the United States,
1969

Rates	Sullivan County	Tennessee	The United States
Live Birth *	17.3	17.5	17.7 ^a
Total Death *	7.0	9.5	9.5 ^a
Fetal Death **	11.6	15.9	(NA) ^b
Neonatal Death **	11.6	16.1	15.4 ^a
Infant Death **	14.7	21.9	20.7 ^a

^aPreliminary figures.

^b(NA) means not available. In 1968 the rate was 15.8.

* Rates per 1,000 population.

** Rates per 1,000 live births.

Source: Tennessee Department of Public Health 1969 Tennessee Vital Statistics. Tennessee Department of Public Health, Nashville, Tennessee; and Bureau of the Census 1971 Statistical Abstract of the United States. U. S. Government Printing Office, Washington, D. C.

TABLE 2

Comparison of the ten leading causes of death in the United States, Tennessee, and Sullivan County, 1969

Rank	United States	Tennessee	Sullivan County
1	Diseases of heart	Diseases of heart	Diseases of heart
2	Malignant neoplasms	Malignant neoplasms	Cancer
3	Cerebrovascular diseases	Cerebrovascular diseases	Cerebral hemorrhage
4	Accidents	Accidents	Pneumonia
5	Influenza and pneumonia	Influenza and pneumonia	Auto accidents
6	Certain diseases of early infancy	Certain diseases of early infancy	Diseases of infancy
7	Diabetes mellitus	Bronchitis, emphysema, and asthma	Accidents (other than auto)
8	Arteriosclerosis	Arteriosclerosis	Diabetes mellitus
9	Bronchitis, emphysema, and asthma	Diabetes mellitus	Suicide
10	Cirrhosis of liver	Symptoms of ill-defined conditions	Congenital malformation

Source: Bureau of the Census 1971 Statistical Abstract of the United States. U. S. Government Printing Office, Washington, D. C.; Tennessee Department of Public Health 1969 Tennessee Vital Statistics. Tennessee Department of Public Health, Nashville, Tennessee; and Sullivan County Health Department 1969 Biennial Report. Sullivan County Health Department, Blountville, Tennessee.

However, suicide and congenital malformation appear as causes of death in the Sullivan County list, but do not appear in the state and national lists.

Statistics on morbidity indicate a consistent decrease in the incidence of all communicable diseases. Tuberculosis and venereal disease still warrant surveillance in the county. However, more and more the emphasis is being shifted to prevention and treatment of chronic illnesses, which are affecting a large number of people (14).

Socioeconomic Characteristics

Sullivan County's location at the upper end of East Tennessee is of economic importance to the inhabitants of the county. The strategic location in Tennessee, bordering Virginia, combined with a favorable climate, rich natural resources, accessibility by highway, rail, and air, and industrious people, makes this region one of the leading trade and manufacturing centers of the South. The South Holston River, through the Tennessee Valley Authority's system of dams, is a source of electrical power to the industrial cities of Bristol and Kingsport (15).

Located within Bristol or its immediate area are 70 industries. Products that have "made in Bristol" on them range from space vehicles and guidance systems to pharmaceuticals and candy. This diversity of products broadens the economy of Bristol and encourages a stable economy for its inhabitants. More than 500 retail establishments serve the city and the surrounding area, providing the largest variety of services and merchandise available for hundreds of miles. Bristol is called the "Shopping Center of the Appalachians" (16).

Situated on the Holston River, Kingsport is a city known for its industrial prowess. The Kingsport Press, Inc. is the world's largest bookbindery, and the Tennessee Eastman Company is Tennessee's largest industry (16). Products of the industries in the Kingsport area range from plastics and books to propellants and explosives (17). About 60 percent of the people in Sullivan County live in and around Kingsport, in an area that is approximately 25 to 30 percent of the total area of the county (15).

According to the 1970 decennial census, 44.2 percent of Sullivan County's population live in rural areas (18). The land is rolling and suitable for most types of farming, with the exception of the mountainous regions in the east and southwest ends of the county and some knob sections in the central part of the county. Major agricultural industries or products include tobacco, corn, wheat, oats, barley, dairying, beef cattle, hogs, and sheep (15, 19). Farms average about 40 acres. A large percentage of the people living on small farms derive a part of their income from the farm and a part from employment in industry (15).

Other information about employment for 1968 showed an average of 52,680 people in the civilian labor force and an unemployment rate of 3.0 per 1,000. Of the 51,100 employed individuals, 1,470 were agricultural workers and 49,630 non-agricultural workers (18).

Though Sullivan County is located in Appalachia and has some low-income families, statistics on income indicate that it is a fairly prosperous county. The median family income in 1969 for the United States was \$9,590 or a per capita income of \$3,139. Sullivan County's median family income in 1969 was \$8,372 or a per capita income of \$2,705. An

examination of figures pertaining to incomes less than poverty level, as defined by the United States Bureau of the Census, showed that 10.7 percent of all families and 13.7 percent of all persons in the United States had incomes less than poverty level. Sullivan County's figures were slightly higher than those for the nation, with 13.2 percent of all families and 15.9 percent of all persons having incomes less than poverty level. However, Sullivan County had a lower percentage of families receiving public assistance, 15.5 percent, as compared to 21.5 percent for the nation. In contrast to the statistics on poverty were statistics showing that in 1969, 37.3 percent of the county's families earned \$10,000 or more, as compared to 47.2 percent for the nation (20, 21).

Political Characteristics

Blountville, an unincorporated area, is the second oldest town in Tennessee and the county seat. In Sullivan County, 48 magistrates are elected every six years. A County Judge, who is elected every eight years, presides over the County Court to transact the county's fiscal matters. In addition, he has many other duties of office. The County Court Clerk is elected every four years and has as one of his responsibilities the recording of the actions of the County Court. Part of the county's money is appropriated for maintenance of the health department by the County Court (15).

In Kingsport, the city manager form of government operates. Five Aldermen are elected by the people at staggered intervals of two years to serve a four-year term. After each election of Aldermen, the Board of Mayor and Aldermen meets and selects one of its members to serve as Mayor for two years. A City Manager is employed by the board to supervise

Kingsport's finances and management. Each year the board appropriates part of the city's money for the maintenance of the health department (15).

Bristol, Tennessee, has the commissioner form of government. The Board of Mayor and Commissioners are elected and serve a four-year term. The position of Mayor is a part-time position, but the Commissioner of Streets and Public Buildings and the Commissioner of Finance and Taxation are both full-time positions. In July, 1973, this form of city government is to be changed to the city manager form. The city of Bristol, Tennessee, and the city of Bristol, Virginia, each have their own governmental body, budget, and programs. The Board of Mayor and Commissioners of Bristol, Tennessee, also appropriates part of the city's money for maintenance of the health department (15).

Another city in Sullivan County that has a governmental body is Bluff City. Bluff City has a Board of Mayor and Aldermen, who are elected every two years to manage the city's business. The positions of Mayor and four Aldermen are all part-time positions. This governmental body does not appropriate any money to the health department's maintenance (15).

Educational Characteristics

The educational level of the people in a community is a consideration in program planning. Health problems are prevalent in segments of the population with low levels of education. In order for programs to be effectively presented to the people, they need to be planned to be commensurate with the level of understanding of the people expected to benefit from them. In Sullivan County, the median number of school years

attended is 11.3 years. Census data for 1970 show that 46.3 percent of the male population and 45.8 percent of the female population 25 years of age and older are high school graduates. Only 1.6 percent of the male population and 1.4 percent of the female population 25 years of age and older have less than five years of formal education (20). There are several colleges in the area and a considerable number of people with doctoral degrees. County residents also have the opportunity to attend a variety of adult education classes in the area (17, 19).

CHAPTER III

POLICIES AND PROGRAMS OF THE SULLIVAN

COUNTY HEALTH DEPARTMENT

The statistics and other information presented in the preceding chapter are helpful in assessing the health needs of the population and in understanding the people and the community for which health programs are planned. For example, the economic level of the population is a consideration in program planning for low-income families in order that the recommendations of health department staff for this segment of the population, which has many health needs, can be realistically attained by people who have limited resources. The age composition of the population is a factor that affects program planning because different age groups have different health needs. Because it is the framework in which the health department must function and the local source of health department funds, the political situation must be considered. In order to better understand the present and to better plan for the future, the history of the county and the health department are examined.

Because of the limitations of staff, time, money, and other resources of the health department, priorities for programs must be established. Priorities are determined on the basis of need and opportunity, as well as the interest of the community and the health department staff. On the following pages, the policies and programs of the Sullivan County Health Department are examined to see what priorities have been established by the official health agency of the county and what health services are provided based upon these priorities.

I. LOCATION OF FACILITIES AND PERSONNEL

Figure 1, page 4, shows the three cities in which the centers of the Sullivan County Health Department are located. Because the population of Sullivan County is dispersed over a 428 square-mile area, with the two centers of population 25 miles apart, there are two health centers in addition to the health center and the central office located at the county seat, Blountville (15). Although the main offices of the Health Officer, the Public Health Administrator, the Director of Nursing, the Assistant Nursing Supervisor, the Environmentalist Supervisor, the Dental Officer, and the Nutritionist are located in Blountville, these personnel provide county-wide services. In addition to these staff members, nurses, environmentalists, health educators, a dental assistant, secretaries, nurses aides, and custodians work in the three health centers to provide services to the people in the county.

II. ORGANIZATION AND ADMINISTRATION

Tenn. Pub. Act ch. 89 (1921) provided for the legal establishment of local public health departments throughout the state (22). This and later legislation provided for each county and/or city or groups of counties to have a board of health, specified the manner for establishing a health department, and defined the geographical jurisdictions and general operations (22, 15, 23).

The Sullivan County Board of Health is composed of six members. The County Judge and the County Superintendent of Schools are elected officials that serve on the board by virtue of their county positions. Two doctors are appointed by the Sullivan County Court from a list of four

doctors recommended by the local medical society. From two dentists recommended by the local dental society, the County Court appoints a dentist to serve on the board (15).

After these five board members have met and selected a chairman, they request a list of qualified physicians from the Commissioner of the Tennessee Department of Public Health. From this list, an individual is selected to be employed as Health Officer and becomes the sixth member of the Board of Health. Once the board's recommendation has been approved by the Sullivan County Court and the physician agrees to the appointment, he is then appointed by the County Court to serve as Health Officer for the county for a four-year term. He may be reappointed to this position to serve successive terms (15). The Health Officer also serves as director of the health department. The current Health Officer has served since 1939 and is the second person to serve in this position. In addition to the Doctor of Medicine degree, he also has a Master's degree in Public Health (24).

Sullivan County's public health program is developed within guidelines recommended by the Tennessee Department of Public Health and approved by the Sullivan County Board of Health. The Health Officer is authorized by the board to plan a program for the county, based upon the problems and needs of the population, to employ personnel, and to obtain appropriations to finance the program. In order to discuss plans and programs of the health department, the Health Officer meets regularly with the board. He also serves as its secretary. The board is authorized to adopt regulations for Sullivan County pertaining to disease control. Neither the

Health Officer nor the board are under any direct administrative control of the Tennessee Department of Public Health. However, the Health Officer, by virtue of certain state legislation, is obligated to assist the Commissioner of the Tennessee Department of Public Health in the enforcement of certain laws that pertain to disease control (15).

Figure 2 shows the organizational chart of the Sullivan County Health Department. The three levels of organization are: policy-making, administrative, and functional. Some of the policy-making and administrative activities are defined by state law, as previously discussed, but variations are found in local organization and administration.

The Health Officer and the Public Health Administrator perform at the administrative level. Under the administration of the Health Officer, the Sullivan County Health Department emphasizes a balanced personal and environmental health program to provide basic public health services to the people of the county. The Public Health Administrator has responsibilities for public relations, financial administration, office management, personnel management, planning, and evaluation. He has served in this capacity since 1957 and is the second person to serve in this position since its creation in 1953 (24, 10).

The third level of organization, the functional level, has nine divisions: Clerical and Statistical, Nursing, Environmental, Medical, Veterinary, Nutrition, Dental, Laboratory, and Health Education. One staff member is employed in the Nutrition Division, but the other divisions have more personnel. Each division is responsible to the Health Officer. A supervisor within each division coordinates activities of personnel within a division and works with the supervisors of other

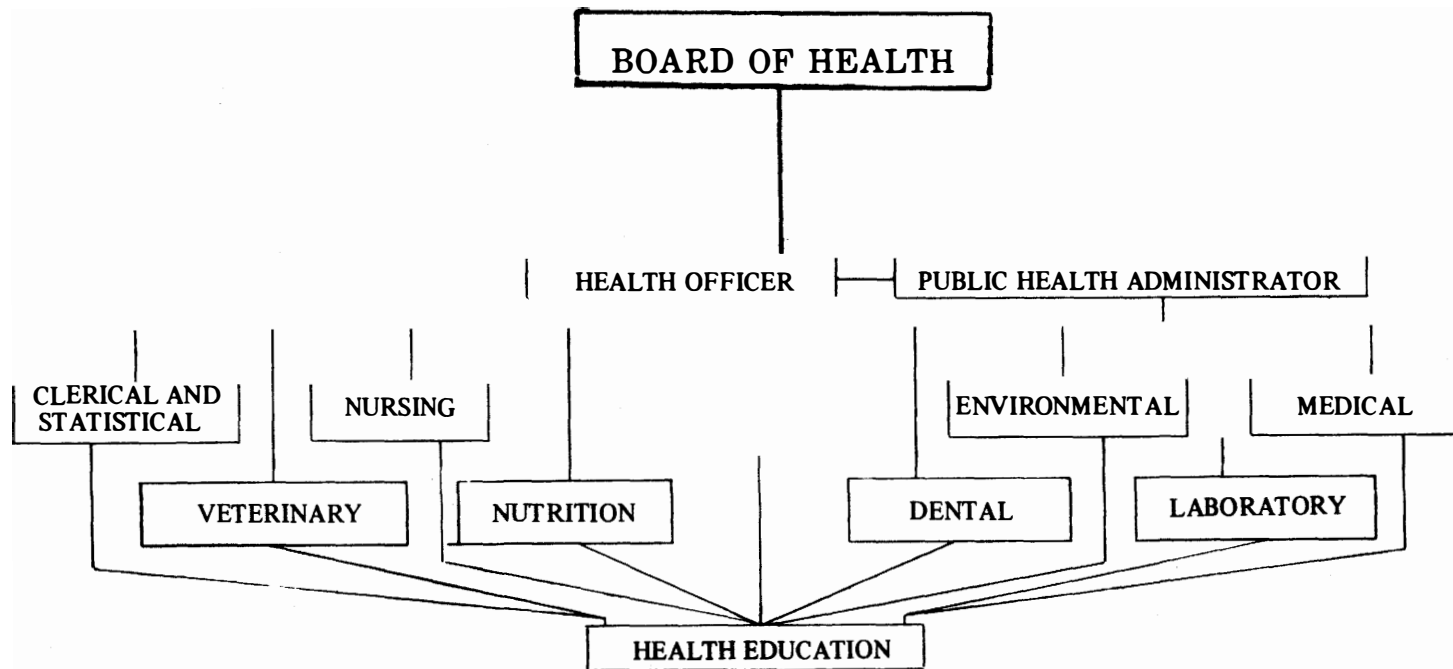


Fig. 2 Organizational chart of services of the Sullivan County Health Department.

Source: Sullivan County Health Department 1971 Biennial Report. Sullivan County Health Department, Blountville, Tennessee.

divisions to coordinate programs and services. At the functional level, the Health Officer also provides the medical services of the health department. Personnel of the health department are employed under the Tennessee Merit System.

III. BUDGET

For the fiscal year July 1, 1971-June 30, 1972, the budget for the Sullivan County Health Department was \$453,734. The revenues and expenditures are shown in table 3. For the fiscal year July 1, 1972-June 30, 1973, the proposed budget was \$533,000. Revenues for the health department are from state and local sources. Some of the state funds are provided on a matched formula basis, with the state matching one dollar for every three dollars given by local sources in the county. Unmatched funds from the state include a \$3,000 basic allotment, \$12,733, based on a formula of ten cents per capita, and \$35,000 because Sullivan County is a training county. The federal government makes funds available to the states for distribution to the counties to train people in public health. With these training funds, the Sullivan County Health Department has trained personnel from health departments in other counties, individuals from foreign countries, and students from colleges and universities doing field work.

Presently the Sullivan County Health Department does not bill Medicare or Medicaid patients who use its services; therefore, there are no funds received from this source. Direct-local funds are those appropriated directly to the health department from local sources. Local sources of income are: the Sullivan County appropriation made by the County Court, appropriations from the cities of Kingsport and Bristol, and appropriations

TABLE 3

Budget of the Sullivan County Health Department
for the fiscal year July 1, 1971-June 30, 1972

Revenues		Expenditures	
State Funds *	\$157,073	Salaries **	\$397,344
Medicare-Medicaid Collections	0	Travel	23,270
Local Fund	271,541	Other Personal Services	8,000
Direct-Local Fund	25,120	Direct-Local	25,120
Total	\$453,734	Total	\$453,734

* Includes training center funds, \$35,000; \$3,000 basic allotment; and \$12,733 (10 cents per capita).

** Includes \$38,304 for employee benefits. Salary of Health Officer is paid from state budget. Employee benefits are paid from this budget.

Source: Price, R. S. 1971 Budget: Sullivan County Health Department. Sullivan County Health Department, Blountville, Tennessee.

from the school boards of these cities. Any of the money remaining from appropriations of previous years goes into the next budget as revenue, savings. Unless specified as direct-local, the money appropriated by these local sources is paid to the state and then returned to the local county with other state monies to finance the Sullivan County Health Department's activities.

With a staff of approximately 50 people, the health department's largest expenditure is for salaries. Another expenditure is for other personal services, which includes the services of a physical therapist and the services of physicians participating in summer roundups and providing some physicals for athletic team members. Direct-local expenditures are for utilities, office supplies and equipment, repair and maintenance of the three health centers, and certain medications (10, 25).

IV. PROGRAMS AND SERVICES

Various programs and services have been developed by the health department to promote the personal and environmental health within the county. Nine major problems that are given priority in the county program include: (1) disposal of solid waste, garbage, and refuse; (2) disposal of human waste by use of centralized sewage treatment plants in the county; (3) improvement in control of water pollution; (4) air pollution prevention; (5) better protection of food supplies against chemical and bacterial contamination; (6) improvement of mental health through preventive programs, including programs for drug and alcohol problems; (7) improvement in programs to help the elderly and chronically ill who need nursing home care and are unable to provide it themselves; (8) medical and dental care that

is early and adequate for those individuals who are unable to obtain this care on their own or under another program; and (9) improvement of the family planning program to prevent unwanted children (26).

The following discussion of the programs and services of the health department indicates how some of these needs and other needs of the people in Sullivan County are being met. The discussion is restricted to those divisions and programs of the health department that were observed or examined by the student during her field experience.

Nursing

The Sullivan County Health Department provides a generalized nursing service to the people. There are a total of 20 registered nurses, two licensed practical nurses, and two nurses aides employed by the health department. The licensed practical nurses have been employed primarily to help with the chronically-ill patients. The nurses aides keep nurses' bags replenished, order supplies, keep the nursing supplies and materials in order, and assist in other activities to enable the nurses to use their time for professional nursing activities. Nursing personnel are assigned to districts and have their offices in the health department center nearest their assigned districts. Excluding the two nursing supervisors and the nurses aides, there are 7,165 people per public health nurse in Sullivan County (27).

Education receives emphasis in the nursing program. Each year the Nursing Division orients student nurses from East Tennessee State University to public health nursing. To promote continuing education, a bimonthly in-service education program is held for the nursing staff and planned by some of the nurses. The public health nutritionist is invited to participate

when topics are related to her program. In addition to in-service education programs, the nurses are encouraged to keep their knowledge current through reading and to actively participate in nursing, public health, and community organizations. The public health nutritionist and the nurses often exchange references that are helpful to their programs.

The registered nurses and the licensed practical nurses are involved in many of the programs of the health department. First priority is given to nurse-patient contacts where the nurse helps individuals through primary or secondary disease prevention or rehabilitation efforts. A second priority is nurse-group contacts where the nurse gives information, discusses methods, or demonstrates techniques in the areas in which she is qualified and which have disease prevention or rehabilitation as the objective. Third is the priority of serving as a resource person to key individuals and groups in the community who can guide or assist other individuals and groups with whom the nurse is working to attain better health or a better life. The public health nurse works in many places in the community. She works in homes, clinics, schools, and with professional and community groups (27, 28).

Environmental Health

Even before ecology became a popular concern of the public, the health department had a program in environmental health. The basic objective of the environmental health program is to see that the environment is as clean and as safe as possible. The eight environmentalists employed by the health department teach principles of sanitation and environmental health and enforce certain regulations pertaining to these.

Producer dairies and pasteurization plants are regularly inspected by the environmentalists and milk samples collected for bacteriological examination. Through the inspection and consultation services of the environmentalists, food establishments are assisted in attaining and maintaining high standards of food sanitation. The environmentalists also consult with home owners and builders about the design of adequate and safe sewage disposal systems. To combat the problem of solid waste disposal, they regulate landfill operations and unlawful dumping. Because of the industrial activities discussed in Chapter II, Sullivan County ranks high in air pollution among places that have been tested for this factor. As a result, air pollution control is an activity of the health department. The environmentalists work with officials from the Tennessee Department of Public Health and the United States Public Health Service in conducting air pollution studies.

Another activity is the inspection of day care centers and nursing homes in the county. Consultation services are provided by the environmentalists and sometimes the public health nutritionist. Other environmental health activities are concerned with the following: a safe water supply, school sanitation, safe swimming pools and recreation areas, inspection of trailer courts, rabies control, insect and rodent control, and camp sanitation (29, 14, 26).

Health Education

Health education is one of the primary activities of any health department. The objective of the health education program is to present information about health and disease to the people to motivate them to practice desirable personal and environmental health attitudes and actions.

Since all members of a health department staff come into contact with individuals seeking health knowledge, there is an opportunity for all of the staff to be health educators. It is the responsibility of the three people employed as full-time health educators for the health department to coordinate and complement these health education efforts and other health education efforts throughout the county.

Various methods are used to arouse interest in, to disseminate information about, and to promote the public's understanding of public health. Many talks and demonstrations are given each year to various groups, such as clubs, schools, and Parent-Teacher-Association meetings. Newspaper articles, bulletin boards, and radio and television programs on personal and environmental health are also developed. Biennial reports of the services of the health department are compiled by the health educators and sent to county officials and other citizens. A small film loan library is maintained by the health educators and is a resource available to the health department staff, schools, and other community groups. The health educators also serve as a resource for ideas on educational methods and materials, assisting the other divisions of the health department and schools, community, civic, and industrial groups in planning and developing health education programs (30, 31, 14).

Dental Health

The objective of the dental health program is to improve the dental health of the people in Sullivan County. A full-time dentist and a certified dental assistant are employed by the health department and work primarily in preventive dentistry. Emphasis is upon prevention, education,

and correction. In the prevention phase of the program, fluoridation of drinking water in approved water systems is promoted. In Sullivan County, the main water supplies in Bristol, Kingsport, and Blountville are fluoridated. About three or four areas in Sullivan County are not fluoridated, but these areas are served by small utility districts that have not been approved for fluoridation. Topical fluoride treatment for newly erupted teeth also receives emphasis. The importance of proper diet to eliminate bacteria that cause tooth decay is stressed by the Dental Division and the Nutrition Division.

Education also plays a role in improving a community's dental health. Some of the methods used by the public health dentist and his dental assistant include: giving talks to various community groups, conducting a dental health education program for Head Start groups and children in the third and sixth grades in schools in Sullivan County, and holding conferences with parents at preschool clinics. The dental health education program presented to Head Start and third and sixth grade school children includes a demonstration of the self-application technique of fluoride treatment and the proper method of brushing the teeth. The children show how well they have learned the techniques by doing the topical fluoride treatment on their own teeth with tooth brushes given to them by the dentist.

Another phase of the dental health program, correction, is primarily for eligible school children. There are several programs under which children receive dental examinations and/or care by the health department dentist or are referred to private dentists by him: Crippled Children's Service, Title I, Head Start, and Cooperative Dental Program. Treatment of children by the Dental Officer is limited to children whose families cannot afford

a private dentist. No prosthetics or straightening of teeth is done due to the limitations of finances, personnel, and time. The only adult correction dental service performed by the health department is emergency dental work for individuals in the county jail (32, 14, 33).

Nutrition

The services that the Nutrition Division provides are an integral part of the total health department program. These services are discussed in Chapter IV.

Clerical and Statistical Services

The secretarial staff helps to keep all divisions of the health department functioning. In addition to providing secretarial services for the director of the health department and performing other secretarial duties for other staff of the health department, the secretaries assist with clerical activities in the health department clinics, keep files on all reportable diseases, maintain and file all records, and make monthly, quarterly, and annual reports on health department activities and health statistics for the county. Because all the health department secretaries are deputy registrars of vital records, certificates of birth, death, and fetal death are sent to them for processing before being sent for permanent filing to the Tennessee Department of Public Health. The nine members of the secretarial staff are indispensable members of the public health team, who must be informed of the total health department program in order to properly direct citizens who phone or visit the health department to the appropriate staff member for assistance (26, 34).

Maternal and Child Health

Maternal and child health programs of the health department include: maternal and infant health, preschool and school health, and Crippled Children's Service. The public health nurse through her activities in clinics, homes, and schools is an active member of the public health team in effecting these programs. Health educators, the public health nutritionist, the public health dentist, and other members of the public health team also provide services in the area of maternal and child health.

Activities of the health department in maternal and infant health have been a major factor in reducing infant mortality in Sullivan County. The objectives of the maternal and infant health program are to safeguard the mother's and baby's health before, during, and after birth and to help parents to plan for the health of their baby. In maternity nursing, priority is given to antepartum and postpartum visits to patients who did not deliver their babies in a hospital; to patients prone to obstetrical, emotional, or medical complications; to teenage patients, especially unwed mothers; and to promoting classes on maternal and child hygiene for expectant parents and high school students. An antepartum clinic is held at the Bristol Memorial Hospital for expectant mothers who cannot afford medical care. The clinic is a cooperative endeavor of the Bristol Memorial Hospital, its medical staff, and public health nurses from the Washington County Health Department, Bristol, Virginia, and the Sullivan County Health Department. The Holston Valley Community Hospital in Kingsport holds an antepartum clinic, but the health department does not participate in this clinic.

Priority in infant nursing service is given to premature infants, infants whose mothers were seen as antepartum patients, infants with anomalies or other health problems, infants of families having significant health histories, and infants from low-income families. Immunization clinics, PKU testing clinics, hematocrit clinics, and well-baby clinics are regularly held in Kingsport and Bristol by the health department.

The health department is not only concerned with the health of the infant, but it is also concerned with the physical, mental, social, and emotional well-being of preschool and school-age children. Priority is placed upon primary disease prevention through immunizations, teaching of good health and dietary habits, and anticipatory guidance of parents. Early recognition of anomalies in children and follow-up on children with significant health problems and children of families having significant health histories are other priorities. The public health nurse, through home, school, and office visits; teacher-nurse conferences; parent-nurse conferences; participation in preschool, school, and special health department clinics; and follow-up on physician referrals, provides services to preschool and school-age children.

Another program is the Crippled Children's Service for children from birth to 21 years of age who have physical defects. Priority for this program was indicated by statistics presented earlier in Chapter II. Activities of the public health nurse in this program include: early case finding, assisting families in obtaining needed medical care for the child, providing nursing supervision, helping families to develop an understanding and an acceptance of the child's condition, assisting families in carrying out prescribed measures for correcting the condition or helping the child

to adjust to the defect, and educating people in the prevention of crippling conditions. When the nurse identifies nutrition needs, she refers the patient to the public health nutritionist (14, 28, 27).

Communicable and Preventable Disease

Control of communicable and preventable diseases has been a primary function of the health department since its establishment. The programs of the health department in this area have been effective in reducing mortality and morbidity due to these diseases. In modern times, the prevention of disease has received the major emphasis. The objectives of the communicable and preventable disease programs are control, suppression, and eradication of these diseases. The methods used to achieve these objectives are: early diagnosis, early and adequate treatment, isolation and quarantine measures, investigation of contacts, investigation of disease outbreaks, laboratory tests for disease detection, promotion of environmental sanitation, immunization of individuals against disease, and education of the public about disease control (35). Immunizations against diphtheria, whooping cough, tetanus, typhoid, smallpox, polio, and measles are available in health department clinics. Public health nurses, physicians, the public health nutritionist, environmentalists, health educators, and other individuals and groups in the community work to promote the objectives of the health department in communicable and preventable disease.

Because tuberculosis still requires surveillance in Sullivan County, the health department has a tuberculosis program to control and eventually eradicate the disease. The health department, private physicians, and the

Tuberculosis and Respiratory Disease Association work cooperatively. Activities of the health department include: distribution of pamphlets of the National Tuberculosis and Respiratory Disease Association by the health educators and nurses to various school and community groups, health department skin-testing and X-ray clinics, skin testing in the health department food handlers' clinics, the tuberculosis control program in the schools, and home visiting by nurses to assist physicians in case finding, treatment, and disease control. The tuberculosis control program in the schools consists of annual skin testing of all eighth grade students in Sullivan County by the public health nurses and an education program on tuberculosis by the health educators.

Venereal disease is another communicable disease that requires surveillance in Sullivan County. Objectives of the health department's venereal disease control program are: to reduce the incidence of venereal disease, to find cases that were previously unknown, and to put all known cases under medical supervision. Epidemiology, treatment, and education of patients, contacts, and the public receive emphasis. The health department holds venereal disease control clinics to diagnose and treat anyone with venereal disease who is unable to afford a private physician or prefers to attend a health department clinic. Public health nurses work in the health department clinics and make visits to patients and contacts, and health educators distribute literature and present programs on venereal disease to various school and community groups (14, 28).

Adult Hygiene and Chronic Illness

Another area of emphasis of the health department is adult hygiene and chronic illness. Objectives of the health department in this area are: to help individuals develop health habits that will preserve and maintain their good health, to help individuals and their families make a favorable adjustment to the conditions that may arise and develop an understanding of them, and to encourage early detection and early and adequate medical care for acute and chronic illnesses.

Cardiovascular disease is the leading cause of death and disability in Sullivan County. Cancer, mental illness, diabetes, and arthritis are other chronic illnesses afflicting the population. In an effort to reduce morbidity and mortality statistics due to chronic diseases, an increasing amount of nursing time is being used to care for individuals with chronic illnesses. Teaching principles of prevention and early detection and helping with treatment and rehabilitation efforts are responsibilities of the nursing staff in this program. In addition to nursing services, services of the physical therapist, the public health nutritionist, and other specialists are often an integral part of the total care plan for the chronically-ill patient (28, 14, 26).

Family Planning

Programs of the health department are planned with consideration of the present and the future. As population continues to increase in Sullivan County, family planning has been promoted to decrease the rate of population growth. The objectives of the family planning program are to help people to plan the size and spacing of their families or to have

their babies by choice instead of by chance. Medical care and family planning assistance are provided to eligible individuals in health department family planning clinics in Bristol and Kingsport. The birth control method given to the patient depends upon the patient's preference and educational level. Papanicolaou's test (Pap test) for cancer that can be self-administered in the home has become a regular procedure in the family planning clinic. As a part of the family planning program, the health educators also show films on family planning and the Pap test to groups in the health department clinics and to other interested groups in the community (26, 30).

CHAPTER IV

THE NUTRITION DIVISION OF THE SULLIVAN COUNTY HEALTH DEPARTMENT

I. DEVELOPMENT AND ORGANIZATION OF THE NUTRITION DIVISION

History of the Division

In September, 1953, the Sullivan County Health Department employed its first public health nutritionist. She has worked as its only public health nutritionist since that date. Prior to her employment, all nutrition activities of the health department were conducted by the nurses and the health educators.

In order to establish a basis for a nutrition program in Sullivan County, the Nutritionist conducted several school surveys on eating habits. Interviews with prenatal patients in clinics and with mothers bringing their children to well-baby clinics provided further information on the nutrition practices of the population. The Nutritionist's membership in community groups and organizations of varying business, professional, economic, and social interests helped her to obtain more information on the customs, activities, and attitudes of the people. An evaluation of nutrition needs and an exploration of the methods effective in meeting these needs were fundamental steps in program planning and development.

Philosophy and Objectives

Nutrition is an integral part of good health. The objective of the nutrition program reflects this philosophy: "Better health through better nutrition for people of Sullivan County" (26).

To achieve this objective, the public health nutritionist provides services to both the well and the ill people in the county. Priority in nutrition services is based upon need and the opportunities to meet these needs. Needs are greatest for low-income people and the chronically ill. In addition, priority is given to segments of the population most vulnerable to nutritional stress: pregnant women, infants and young children, and the elderly. Through various programs and services of the Nutrition Division and through cooperation with other health department disciplines and with individuals and groups in the community, the public health nutritionist has the opportunity to help people to help themselves.

Organization

Relationship to state organization. In Tennessee, public health nutritionists are assigned to state, regional, and county positions. The nutritionist at the county or local level may receive technical advice and guidance from the regional nutritionist and the state nutrition director. She may also attend field staff meetings.

During the field experience, the East Tennessee regional nutritionist from the Tennessee Department of Public Health visited the Sullivan County public health nutritionist to learn about the nutritional needs and the nutrition programs in Sullivan County. Because the regional nutritionist was new in her position, the meeting helped to orient her to upper East Tennessee. During the visit, the regional nutritionist told the Nutritionist about some new nutrition education materials available from the state office.

Relationship within the local organization. The public health nutritionist is administratively responsible to the director of the health department. He has specified that the nutrition program must fit into the overall program of the health department, but has given the Nutritionist full responsibility for effecting the program. The director gives guidance to her if requested and requires daily coded activity reports.

Qualifications. All public health nutritionists in Tennessee are employed under the Tennessee Merit System. A copy of the current job specifications is found in Appendix A.

The Nutritionist received her Bachelor of Science degree with a major in nutrition and dietetics from Virginia Polytechnic Institute. She taught home economics, completed a dietetic internship at Vanderbilt University Hospital, and was a dietitian in civilian hospitals and in the United States Air Force, serving in the United States and Japan. In 1953, she received her Master's degree in Public Health from the University of North Carolina.

Communications. Because the Nutritionist has her main office in the health department in Blountville, she often interacts with members of the other health department disciplines and the health department administrators, who also have their main offices there. Good communication is maintained with the personnel in the Kingsport and Bristol health centers through frequent visits to these locations and through telephone communication. To increase communication and cooperation between the Nutrition and Nursing Divisions, the Nutritionist is planning to schedule informal sessions monthly with the nurses in each of the three health centers to

keep the nurses up-to-date on nutrition and to encourage a mutual exchange of ideas and problems of interest to both divisions.

Reports. The public health nutritionist, as well as other health department staff, keeps a daily coded report of her services and activities. The secretaries of the health department use the information from daily reports to compile the Quarterly Court Report that is presented to the County Court and to compile other reports of health department activities. In addition to the daily coded reports, narrative reports on nutrition programs and services are made by the public health nutritionist. For example, in response to a questionnaire sent by the state nutrition office regarding nutrition screening and assessment at the local level, she reported the findings of the study of Head Start records reported in Chapter V. This information was used by the state nutrition office as a basis for a report to a maternal and child health regional workshop held in September, 1972. An annual narrative report has been sent to the state nutrition director on request. A summary of the activities of the Nutrition Division is prepared for the biennial reports of the health department.

Professional development. Continuing education is an important factor in professional development. The person truly interested in doing the best that he can in his job will want to maintain current knowledge of the subject matter in his field. Active participation in one's professional organizations is one of the best ways to keep up-to-date on these current developments and also to make others aware of the role of public health in the community. The Nutritionist belongs to local, state, and national dietetic associations and to the state, regional, and national public health

associations. She has not only been an active member of these organizations, but she has also served in several elected and appointed positions. She is presently Chairman of the Health and Welfare Section of the Tennessee Home Economics Association and co-editor of the newsletter of the Southwest Virginia-East Tennessee Home Economics Association, an organization which she helped found, serving as its first president. In addition, she is a member of other community organizations of varying social and civic interests.

The public health nutritionist may attend one out-of-state professional meeting in a fiscal year with expenses paid. She may obtain an educational leave of absence for other meetings if they benefit her professional development, but her expenses are not paid unless she is a speaker on the program or an officer in the regional or national association. Any in-state professional public health meetings may be attended with expenses paid. Only when she is an officer or a speaker on the program, are her expenses paid for attending in-state professional meetings other than public health meetings.

During April and May, 1972, the Nutritionist attended the annual meeting of the Tennessee Public Health Association in Nashville and a dental conference in Mexico with her husband, who is the Dental Officer for the county. At the dental conference, the role of nutrition in preventive dentistry was discussed. The student attended two meetings of the Tri-Cities Dietetic Association with the Nutritionist. At one meeting, a representative of IBM presented "Dietary Department of the Computer Age" to inform members of the role of the computer in menu planning.

The Nutritionist subscribes to several professional journals through the health department or through personal subscription. In addition, she has access to other publications received by the health department library, such as medical and nursing journals, dental journals, and public health journals. Subscriptions to professional, news, and variety periodicals enable her to have current information on topics that are of interest to the profession and the public. Often she is asked to express her views as a nutritionist on the validity of these various sources.

Other ways for continuing education are attendance of teleconferences, field staff meetings, and in-service education programs. Professional development is a responsibility of a nutritionist to herself, her profession, and the public that she serves.

II. MAJOR PROGRAMS AND ACTIVITIES OF THE NUTRITION DIVISION

The Nutritionist has developed various programs to meet the needs of the people. Many of her activities are integrated with those of the other health department disciplines and with individuals and groups in the community. On the following pages, these program activities are discussed.

Overall Activities

New health department employees must understand the specialized contributions that a nutritionist makes to the public health program in order that they utilize her services. New employees of the health department, student nurses, and other visiting students to the health department have an orientation session with the Nutritionist.

In addition to her orientation responsibilities, she conducts some in-service education programs, especially with the Division of Nursing.

These programs may be on general nutrition topics or on such specialized topics as diabetes, prenatal nutrition, or diets for cardiac patients. The programs are designed to help the nurses to work more effectively with their patients who may have nutritional problems.

The development of nutrition education materials that are used by the public health nutritionist in her work, by other health department disciplines, and by various individuals and groups in the community is another activity of a nutritionist. For example, the Nutritionist prepared Nutrition: Handbook for Public Health Nurses to help the nurses in their work with individuals and families. How to Feed a First Grader was a pamphlet also prepared by her. Public health nurses and the Nutritionist often distribute copies of this pamphlet during preschool registration clinics as a resource for parents.

A large file of nutrition education visuals and materials is kept by the Nutritionist. She refers to the file when she prepares for a demonstration or lecture and when other people request materials. In addition to the nutrition education materials that she has prepared herself, she also includes educational materials from other reputable sources which have been evaluated for appropriateness and accuracy.

Public Health Nursing

The health department nurse comes into contact with many people in her work in clinics and home visits. Because of the relationship that she establishes with the people whom she serves, she is able to bring to her clients information and, in turn, can bring information about any problems of her clients to other members of the health team, such as the public health nutritionist.

The Nutritionist offers consultation services to the nurse. If the nurse has a patient with a nutritional problem that requires specialized knowledge and skills, she may come to the Nutritionist, and together they will work out a plan for patient care. If a patient referred by the nurse has complicated nutritional problems requiring nutrition counseling skills, the public health nutritionist will sometimes make a home visit alone or with the nurse. She may make other home visits with the nurse, mainly for demonstration or teaching. Other home visits are made to remain familiar with home situations.

Environmental Health

The Nutritionist helps to upgrade food service and sanitation practices. Participation in in-service education programs and workshops for restaurant personnel, school lunch personnel, and other food service personnel have been activities in environmental health. In addition, the Nutritionist has visited day care centers, nursing care facilities, and other group care establishments upon referral from the environmentalists inspecting the food service facilities or upon the request of the agencies. Her role has been one of a consultant in helping these groups to understand and meet food service and sanitation standards. She also offers consultation services to the environmentalists of the health department.

Health Education

The Nutritionist offers consultation services to the health educators. From her files, the health educators may obtain materials to use when they participate in nutrition education programs. To help the health educators maintain a nutrition and food service education film and literature

file, she evaluates audio-visual and printed materials pertaining to these topics. The health educators, in turn, make posters, lettered signs, slides, and other visual aids for the Nutritionist to use in her program. Another example of cooperation is working together on bulletin boards for Diabetes Detection Week, September Breakfast Month, and June Dairy Month.

Dental Health

The Nutritionist has helped to promote dental health by participation in dental health education programs with the Dental Officer, by membership and presidency in the Dental Auxiliary, and by incorporation of dental health into some of her nutrition education activities. In prenatal counseling sessions, especially if the mother is troubled by nausea of pregnancy, the public health nutritionist emphasizes care of the teeth and the mouth. Some of the topics that she has presented in dental health programs in the schools are: the role of sweets in tooth decay and recommendations for healthful snacks. These and other topics, such as the importance of keeping teeth healthy with regular brushing and visits to the dentist, are often emphasized in general discussions to parents of young children and other individuals and groups in the community. She and the other wives of dentists have helped to promote Dental Health Week, participated in health career programs, delivered dental health education posters, and helped with other dental health education efforts in the schools and in the community.

Maternal and Child Health

Through her work with other members of the health department staff and through counseling of individuals, the Nutritionist provides services

to mothers and children. She offers consultation services and in-service education programs to public health nurses in the area of maternal and child health and counseling services to individuals seen in prenatal and well-baby clinics and individuals referred by the public health nurses or physicians.

Mothers visiting the prenatal clinic at the Bristol Memorial Hospital for the first time are seen by the Nutritionist. Before interviewing and counseling the mother about her diet, she reviews the medical and social history recorded on the patient's chart. The patient's food habits, weight gain, problems of sickness and nausea, problems of income, the family situation, and other factors that may affect the mother's food habits are discussed in the counseling session. The influence of these factors are considered as she individualizes her counseling. The nutritional requirements of pregnancy and suggestions for meeting these are discussed with the patient and some nutrition education materials are given to her. Follow-up of these patients, especially high-risk cases, may be done by the Nutritionist at other prenatal clinics. If the patients are not high-risk cases, follow-up is usually done by a public health nurse in clinic and home visits.

At well-baby clinics at the Bristol Memorial Hospital, the Nutritionist is available for referrals by the physician or public health nurse of any mother and her child needing nutritional counseling. When she talks with the mother about her baby's diet, she also counsels the mother on general principles of good nutrition for the mother and her family. As she does in all counseling sessions, she individualizes her counseling and considers the many factors that may affect diet. Follow-up of individuals seen in well-baby clinic by the Nutritionist is similar to the follow-up of prenatal clinic patients.

Preschool and school-age children also benefit from the services of the Nutritionist. At the few schools still holding preschool registration clinics, she is sometimes asked to talk to parents and children about child nutrition. She also offers consultation services to the Head Start Nutritionist and is planning some programs with Head Start this year. (See discussion of the Head Start study in Chapter V.)

Not only nurses, but the teachers and school administrators are encouraged by the Nutritionist to include nutrition education in the total health program. Public health nurses visiting in the schools distribute nutrition education materials that they have obtained from her. All health and home economics teachers are sent copies of newly revised Recommended Dietary Allowances with comments about the revisions. In addition, she provides teachers with a list suggesting nutrition programs and resources for promoting nutrition education in the schools. Maternal and child health receives major emphasis in the Nutritionist's program.

Communicable, Preventable, and Chronic Disease

Another area receiving major emphasis in the Nutritionist's program is chronic illness. She counsels patients at the out-patient diabetes clinic and the cardiac clinic in the Bristol Memorial Hospital and at the out-patient diabetic clinic in the Holston Valley Community Hospital in Kingsport. She also provides consultation services to public health nurses and counsels chronically-ill patients on referral from public health nurses and physicians.

The Nutritionist conducts a series of three lectures for diabetics at the diabetic clinics, presenting one lecture at a clinic to a group of

five or six people. In addition to conducting classes, she reviews the patients' laboratory reports and medical charts to note changes in blood sugar and weight, physicians' diet orders, and other pertinent comments. She then does individual patient counseling. If the patient is new, she gives him diet instruction. If she has already instructed the patient, she talks to him about any problems that he has related to diet.

Instead of conducting group classes at the cardiac clinic, the Nutritionist only does individual interviewing and counseling of patients. After reading the patients' medical charts for the physicians' diet orders and other pertinent comments, she counsels the patients. The physicians' orders in respect to dietary modifications are explained to the patients, with consideration given to the educational level, the income, the family situation, the emotional state of the patients, and other factors that must be considered in any type of individual nutritional counseling, in order that the dietary modifications can be realistically applied by the patients with the help of their families. Follow-up on patients during return visits to the clinic enable the Nutritionist to give continued support and encouragement to cardiac patients and their families in practicing the dietary modifications necessitated by chronic disease.

Though the Nutritionist does not participate in any clinics for communicable and preventable diseases, she does offer consultation services to public health nurses with patients having diseases requiring diet modifications and counsels patients on referral from public health nurses and physicians. She has also given talks to high school health classes on nutrition and tuberculosis.

III. COORDINATION OF NUTRITION SERVICES WITH OTHER AGENCIES

There are several agencies and organizations in the Sullivan County area with which the public health nutritionist works cooperatively in promoting good nutrition. The student had the opportunity to visit several of these agencies, to talk with their personnel, and sometimes to observe their daily activities. On other occasions, she talked with the public health nutritionist about some of the agencies that she did not have an opportunity to visit. On the following pages, several of these programs are discussed in order to illustrate the interrelationship of services provided by the public health nutritionist and other agencies in the community.

Nutrition Committee of Sullivan County

The Nutrition Committee has been functioning in Sullivan County for about five years. Members of the committee include representatives from various agencies and organizations in Sullivan County: the Sullivan County Health Department Nutritionist, the Sullivan County Extension Agent, the two welfare department Homemakers, the utility companies' Home Economists, the Head Start Nutritionist, and representatives from the Dairy Council of the Appalachian Area. The main purpose of the Nutrition Committee is to work with the Food Stamp Program in operation in Sullivan County in providing nutrition education for recipients.

Members of the Nutrition Committee have given demonstrations at the food stamp distribution offices in Sullivan County and have prepared posters for display at these locations. Printed materials and recipes for distribution to food stamp recipients have also been prepared. The May copy of

a circular that is distributed each month to the community, including food stamp recipients, was prepared by the student to inform the public of good buys among the Basic Four food groups and a way to use some of them in a recipe. The emphasis of the Nutrition Committee has been upon informing the recipients of food stamps about good nutrition and budgeting principles and upon suggesting some practical ways for the recipients to apply these principles.

Tennessee Department of Public Welfare

Homemaker Service. In Sullivan County there are two women employed as Homemakers with the Tennessee Department of Public Welfare. They work closely with caseworkers in the department to help welfare recipients use limited resources more effectively. They assist with cleaning and house-keeping instruction, cooking, personal appearance, meal planning, grocery shopping, organization of housework, better child care, nutrition, sewing, and budgeting. The Homemaker Service has been in operation in Sullivan County since 1967.

The Homemakers work with individuals and families in their homes and with groups. For example, they have conducted classes at the Neighborhood Service Center in Bristol using subjects such as low cost meals, personal hygiene, infant feeding, use of the best food buys, use of powdered milk, and use of leftovers. Providing transportation for someone to a family planning clinic, teaching a young mother how to feed and care for her baby, and teaching a housewife how to make a stew are other examples of activities of the Homemakers.

Furthermore, the Homemaker is often a communication link between her clients and other community services. Many times the public health

nurse or public health nutritionist refers clients to the welfare department services, particularly the Food Stamp Program and the Homemaker Service. The Homemaker often uses materials from the health department, the National Dairy Council, and the United States Department of Agriculture in her work.

During the field experience, the Nutritionist and the student conducted an in-service education workshop on diabetes for the two Homemakers because they often work with diabetics and needed help. Workshops on other topics may follow if the Homemakers request them. By teaching the Homemakers some principles of nutrition in disease, the Nutritionist can extend her effectiveness because the Homemakers then teach others what they have learned (36).

Day care licensing. One of the legal responsibilities of the Tennessee Department of Public Welfare is to license individual homes, groups, and agencies who provide day care for children outside the home. Licensing is done not only to maintain minimum requirements for good care, but also to suggest desirable standards of care, to provide child-caring agencies with consultation services, and to increase the agency's understanding of early child development. Direct consultation is provided by the licensing agent to individuals and groups interested in starting a day care center and to operating day care staff and boards. Organization and administration, admission of children, staff, equipment, program, health, food, physical facilities, care of handicapped children, and care of infants and toddlers are areas which have minimum and desirable standards defined in Standards for Day Care and are areas in which the licensing agent offers consultation services (37).

The student spent half a day with one of the two licensing agents for Region I, an eight-county-area in upper East Tennessee which includes Sullivan County. In Sullivan County, there are approximately 40 day care centers and three family day care homes. Head Start centers in Sullivan County are included under the licensure program. Through consultation, inspection and licensing, workshops, and bimonthly newsletters, the licensing agent provides services to day care centers.

The licensing agent said that she, the Nutritionist, and the Home Economists from power companies in Sullivan County worked cooperatively on a fall workshop in 1971 for food service personnel of day care centers in Region I. In addition, the public health nutritionist has provided consultation on meal planning and food service to individual day care centers upon request (38).

University of Tennessee Agricultural Extension Service

The University of Tennessee Agricultural Extension Service in Sullivan County has six staff members: the Extension Leader, two Extension Agents, two Assistant Extension Agents, and a secretary. Extension brings the research and knowledge from the University of Tennessee to the people in local counties to help them in applying principles and techniques to improve their standard of living. Much of Extension's work is with 4-H clubs, home demonstration clubs, and community groups, as well as with individuals.

The public health nutritionist has worked closely with the Extension Agent on various programs. There are 23 home demonstration clubs in Sullivan County, each with a leader for its health and nutrition section.

The Nutritionist participated in a home demonstration nutrition leaders' workshop on budgeting and breakfast ideas. She also worked with the Extension Agent on a weight-control program for some home demonstration club members.

In turn, the Extension Agent has shared printed materials from the Expanded Food and Nutrition Program with the Nutritionist. Sullivan County does not have this program, but the Sullivan County Extension Agent receives information from a program in a neighboring county which is helpful in working with low-income families. The Extension Agent also refers people to the public health nutritionist if they need counseling about a modified diet.

Dairy Council of the Appalachian Area

The purpose of the National Dairy Council and its subsidiaries is to provide health education to the public. Each affiliated organization, such as the Dairy Council of the Appalachian Area, serves as a resource to the community for programs in health and human welfare. Research findings, materials for health education, and program plans are made available to schools and other individuals and groups in the community through the affiliated Dairy Council. The Dairy Council works with professionals, educators, and consumers.

The staff of the Dairy Council of the Appalachian Area, which is located in Bristol, consists of the Executive Director, the Assistant Director, and a secretary. Because the Dairy Council works with schools, the public health nutritionist can spend less time in this area. When the Dairy Council home economists receive a question related to modified diets, they often use the public health nutritionist as a resource. She,

on the other hand, uses some of the Dairy Council's nutrition education materials in her work. Another activity of the Dairy Council is to coordinate nutrition activities in the community. The Dairy Council home economists serve actively on many community committees, including some committees of which the public health nutritionist also serves. Both the public health nutritionist and the Dairy Council home economists are interested in promoting good health and nutrition in the community (39, 40).

Appalachian Heart Association

The Appalachian Heart Association, an affiliate of the American Heart Association, is located in Kingsport. The public health nutritionist actively supports its efforts to make services and information on heart disease available to lay and professional people in the area. Materials of the American Heart Association are often used by the public health nutritionist in her work. As a member of the Appalachian Heart Association's Speakers Bureau, she has spoken to various civic groups that have requested programs on heart disease.

American Red Cross

The American Red Cross is a nationwide and international voluntary organization that provides services in times of disaster, war, and peace. Services to the armed forces and veterans, relief for disaster victims, a blood program, programs and courses promoting the protection of life and health and safety education are some of the activities of the American Red Cross (41).

The American Red Cross, Kingsport Chapter, has a program committee whose purpose is to help the chapter to develop and expand its programs

to better meet the needs of the community. The public health nutritionist, a public health nurse, representatives from the Dairy Council, and representatives from other nursing and community groups in the area attend the meetings of the committee to contribute their perceptions of the community's needs and ideas for program planning. In addition to attending some of these committee meetings, the public health nutritionist has offered to help teach any of the Red Cross classes relating to nutrition and has supported the many activities of the Red Cross.

Bristol Tennessee Electric System

The Bristol Tennessee Electric System employs a Home Economist. She is not only a sales and public relations person, but she also promotes and teaches wise care and use of electrical products through demonstrations, home visits, phone calls, and television and radio programs. In her work, she often has the opportunity to impart principles of good nutrition, budgeting, and meal planning to the public. For example, a handout for a food and appliance demonstration includes a discussion on meal planning, selection from the Basic Four food groups, and table setting. Nutritious snack foods is a topic that the Home Economist has presented to teenagers.

The Home Economist is asked to do programs for a variety of community groups, such as home demonstration clubs, high school home economics classes, Girl Scouts, 4-H clubs, and civic clubs. In a company newspaper that she writes each month, she sometimes includes nutrition tips. She uses materials from the Dairy Council, the United States Department of Agriculture, and the public health nutritionist, in addition to materials that she compiles herself. As a member of the Nutrition Committee, she has worked with the

public health nutritionist and others in the community interested in promoting good nutrition (42).

Holston Valley Community Hospital and Bristol
Memorial Hospital Education Programs.

Dietitians at the Holston Valley Community Hospital in Kingsport and the Bristol Memorial Hospital in Bristol hold classes for diabetic in-patients. The student attended a series of three classes on diabetes at the Holston Valley Community Hospital. A dietitian and a registered nurse discussed diabetes, its care and treatment, in detail, using a variety of teaching methods to help the patient to understand the disease and its treatment. In addition to the classes, diabetic patients and other patients on modified diets receive individual diet counseling. The public health nutritionist through out-patient clinic classes and counseling complements the activities of the hospital dietitians.

CHAPTER V

PROFESSIONAL DEVELOPMENT

I. KNOWLEDGE, SKILLS, AND ABILITIES NEEDED BY THE PUBLIC HEALTH NUTRITIONIST

Consultation with Other Professional Workers

One of the services that a public health nutritionist offers to other professional workers is consultation. The student did not have an opportunity to provide this service during the field experience, but her observation of the public health nutritionist's application of the techniques that the student had studied in class increased her understanding of the consultation process.

The Nutritionist is often asked by public health nurses to provide consultation to help them with nutrition problems of patients. For example, a nurse asked the Nutritionist what the nurse might discuss with the school lunch manager concerning feeding a child who needed a bland diet. The nurse was very helpful in relating her knowledge of the patient and the family and school situation to the Nutritionist. Additional questions were asked by the Nutritionist. After the problem had been delineated, she explained to the nurse principles of a bland diet, and the importance of discussing these with the school lunch manager. Other questions were asked to evaluate the nurse's understanding of these principles and their application to the particular situation. Any suggestions that the Nutritionist made to the nurse were based upon what the nurse had related to her earlier. Both the nurse and the Nutritionist made contributions to the

problem-solving process. Observation of this consultation session and others increased the student's understanding of the role of the consultant and the consultee.

In-service Education

In-service education is an integral part of the total health department program. At one in-service education program for public health nurses, the Regional Nursing Consultant, the Assistant Director of Nursing and the Chronic Illness Nursing Consultant from the Tennessee Department of Public Health conducted the program. The student attended this in-service session and learned techniques of good interviewing and communication that she will be able to use as a public health nutritionist.

Not only was the content of the program excellent, thought-provoking, and stimulating, but the educational techniques used by the Assistant Director of Nursing were excellent: the encouragement of questions and the sharing of ideas, the exemplification of principles with actual cases in the nursing files, and the use of a film to dramatically emphasize roadblocks to communication.

An explanation of the new chronic illness forms to be used by public health nurses for patients' records emphasized the efforts of the Tennessee Department of Public Health to promote continuity of patient care through an improved recordkeeping system. It also showed the manner in which new procedures are introduced to local health departments by the state office. From attending the program, the student obtained an insight into the role of the state and regional consultants with the local health department and an insight into some of the topics of interest to nurses.

An in-service session was also conducted by the public health nutritionist for the Head Start Nutritionist. The main reason for conducting the in-service session was to make suggestions for improving the quality of Head Start snacks because the posted snack menus for April, 1972, examined during the Head Start study (discussed later in this chapter), seemed to be consistently high in carbohydrate foods and low in protein and iron-containing foods.

From observation of and participation in this in-service session, the student saw the importance of a public health nutritionist using tact in making suggestions to another professional worker. To introduce the in-service session, a positive approach was used. Because the Head Start Nutritionist had earlier asked for some ideas and materials for nutrition activities, particularly some for a Head Start parents' program, the public health nutritionist used these expressed needs as the basis for inviting the Head Start Nutritionist to an in-service conference to discuss some ideas for the parents' program, snacks, and various resource materials.

Throughout the in-service session, the public health nutritionist considered the viewpoint of the Head Start Nutritionist. She not only made suggestions about the snack menu, but she also discussed the other two topics that would help the Nutritionist in her program. In making suggestions for improving the quality of the snacks, she knew that the Nutritionist had to work within a budget and made her recommendations accordingly. She was careful to explain the basis for making the recommendations and to explain how the recommendations might be practically effected. The Head Start Nutritionist welcomed this support for her

program and shortly after the in-service conference was able to improve the quality of the snacks in some of the Head Start classes. The student's major contribution to the session was to explain a method that was used to determine food cost per serving.

Group Work with Nonprofessionals

An insight into working with different types of audiences was gained by participating in a preschool registration clinic with the principal, the school lunch manager, a first-grade teacher, and a public health nurse. About 35 parents, some with small children present, attended the program to learn their responsibilities for getting their children ready for the first grade. The student gave a talk based upon a pamphlet prepared by the Nutritionist, How to Feed a First Grader. From this presentation, she saw the importance of planning the points to be emphasized in the speech, of rehearsing the presentation, of using concrete examples, and of having pamphlets to distribute for emphasis of points presented. Some favorable comments from this lay, middle-class audience on the speech increased the student's confidence in her ability to speak before groups. She also saw another way in which the public health nutritionist brings nutrition information to the community.

Other opportunities for group work were two classes for diabetics at the out-patient clinic at the Bristol Memorial Hospital. The first class was an impromptu presentation of the booklet, Meal Planning with Exchange Lists. The listeners seemed interested in learning about diabetes and the diabetic diet and were not distracted by the people moving through the nearby corridor.

On the basis of this impromptu experience, a second class for the diabetic clinic was planned with a consideration of such factors as the distractions in the clinic environment, the educational and economic level of the listeners, and the limitations of presentation time. For the second class, a demonstration with sugar and plastic food models was presented to show how much carbohydrate is in a 1500-calorie diabetic diet, which exchange lists contain the most carbohydrate, and how the diabetic meal plan helps the diabetic to divide the carbohydrate content of the diet fairly evenly through the day. Food models and the selection of a variety of food combinations, such as sandwiches, and cereal with milk, were used to show the audience how variety could be effected, how exchange lists could be used together, and to show the actual serving sizes of some of the foods in the exchange lists. Before class, the student selected sample meals according to the diabetic meal plan because of time limitations, but asked the audience questions to encourage participation and to stimulate interest.

The student nutritionist thought that the classes were effective in increasing the diabetic patient's understanding of the diabetic exchange lists and the purpose of the diabetic meal plan. When the presentation was discussed with the Nutritionist, she said that she was pleased with the presentation and the interest of the audience in it. Talking more slowly, using "you knows" and "likes" less frequently, and reducing the number of points covered in one teaching session were suggested to improve effectiveness. The Nutritionist said that these were common errors of inexperienced nutritionists and could be eliminated with more experience.

The opportunity to work with and to observe nutrition activities of these and other groups emphasized the importance of planning presentations and of adapting the presentations to the educational, economic, and interest level of the audience. Observation of presentations by the Dairy Council home economists to a senior citizens' group and to a junior high school class showed the student the home economists' consideration of these factors in their presentations.

Planning Conferences

Many conferences took place between the Nutritionist and the student in order to plan activities to help the student to fulfill her objectives for the field experience. Continuous evaluation and modification were necessary. Other consultation and supervision conferences were held to discuss program planning and development for the Head Start study, discussed later in this chapter. From these experiences, the student saw the contribution of consultation and supervision conferences to program planning and development.

Guidance and Counseling of Nonprofessional Persons

Interviewing and counseling are techniques often used by the public health nutritionist. The hospital dietitian also uses these techniques. Before coming to graduate school, the student worked as a hospital dietitian for several months. Most of her work was with middle-class individuals, but some experiences were with low-income individuals. The hospital experiences helped to develop some skill in interviewing and counseling. Experiences during the field training in Sullivan County, both through observation and participation, enabled further development of skills in these areas and in working with low-income individuals.

The Nutritionist was observed in interviewing and counseling sessions at diabetic, prenatal, and well-baby clinics. The particular techniques that she used to establish rapport with the patients, to individualize interviewing and counseling, and to emphasize basic principles of nutrition and the application of them were noted by the student and considered in relation to her hospital experiences. In the counseling and interviewing sessions that she conducted, the student used some of the techniques that she had observed the Nutritionist using and some of the techniques that she had already known.

Because of inexperience in working with mothers seen in prenatal and well-baby clinics, the student at first was somewhat nervous in sessions with these patients. With more experience, she became more confident. A factor that contributed to this increased confidence was the increased familiarity with what questions to ask these patients, the types of questions that they asked her, and what answers were appropriate to these questions. In prenatal, well-baby, and diabetic clinics, she tried to individualize her interviewing and counseling to promote understanding and motivation of the patients as she considered the educational, economic, and cultural backgrounds of the patients, along with other factors that might affect diet. It was thought by the Nutritionist and the student that more experience in interviewing and counseling of all kinds of people would increase the student's competency in using these communication skills.

II. A STUDY OF NUTRITION IN THE SULLIVAN COUNTY HEAD START PROGRAM

Introduction

Low-income, preschool children are considered to be particularly vulnerable to nutritional stress (43). The Nutritionist and the student undertook a study of nutrition in the Sullivan County Head Start Program because the following statements and statistics indicated that nutritional problems are prevalent in this segment of the population and that programs are needed to improve the nutritional status of Head Start children: Data on iron deficiency anemia have shown that it "is the most widespread nutritional deficiency syndrome recognized in the United States today," and the most prevalent nutritional disorder occurring among infants and children in the United States (44, 45). Because heavy infections of intestinal parasites may contribute to malnutrition in marginally nourished children, the statistics about the prevalence of intestinal parasites in young children in Sullivan County were of interest (46). Public health nurses indicated that 100-120 children between three and ten years of age were treated for roundworms and whipworms during 1971 in one area of the county (47). According to the Social Worker Coordinator for Head Start, 55 Sullivan County Head Start children were found to be infected with intestinal parasites (48).

Another reason for selecting the Head Start group for study was that their age is "an age where food habits are changing from home habits to school habits" (26). Working with this age group would provide an opportunity to make the change in food habits "a change for the better" (26). Furthermore, conducting the study and developing program activities based

upon the findings of the study offered an opportunity to work with many individuals to improve the nutritional status of Head Start children: the Project Director, the Nutritionist, and the Nurse of the Upper East Tennessee Economic Opportunities Authority, Inc., and Sullivan County Head Start social workers, teachers, parent coordinators, parents, and children, as well as public health nurses. By helping the children to develop good food habits, one might have a positive influence upon the food habits of the families of Head Start children as well.

Nutrition related data from Sullivan County Head Start, which is under the coordination and supervision of the Upper East Tennessee Economic Opportunities Authority, Inc., were collected during April and May of 1972. Data related to poor nutritional status, including low hemoglobin values, low weight, and the presence of intestinal parasites, were collected from various Head Start records on children enrolled for the 1971-72 school year. In addition, interviews and observations were made at a Head Start center to understand the role of various staff members in effecting the nutrition program of Head Start.

Objectives and Procedure

Before beginning the study, the public health nutritionist held a planning conference with the student to develop the objectives of the study and the methods to be used to achieve them. The long range objective was to improve the nutritional status of Head Start children. The short range objectives were:

1. To determine the availability and usability of records kept by the staff of Head Start which are useful in determining nutritional status

or identifying problems, such as low hemoglobin, low weight, and presence of intestinal parasites.

2. To develop an understanding of the Head Start nutrition program.

3. To make recommendations to increase the effectiveness of Head Start child health records and the nutrition program and to suggest program activities related to the nutrition program which should improve the nutritional status of children presently enrolled in Head Start.

Before any other plans were formulated, the Project Director of the Upper East Tennessee Economic Opportunities Authority, Inc. was visited to discuss the proposed study and to ask her cooperation and the cooperation of her staff in providing data. She and her staff were very willing to cooperate and offered further suggestions for methods to use to obtain data. When an examination of Child Health Records showed that many of them were incomplete in terms of the data desired for the study, the Project Director suggested that the medical examination records and the teachers' height and weight records of the children, kept by social workers, be examined. Other suggestions were to talk with the Cafeteria Manager at Douglas School and other staff members and to visit a Head Start class in progress. An introduction of the public health nutritionist and the student, as well as an explanation of the study, by the Project Director to other Head Start staff members was valuable in beginning a good working relationship.

Another important step was to determine what standards would be used for identifying children with low hemoglobin values, low weights, or intestinal parasites. Low weight as a possible indicator of undernutrition or malnutrition is a factor that is often assessed in studies of

nutritional status (49). The growth chart that is a part of the Child Health Record used by Head Start was the basis for determining whether a child was low in weight. The Child Health Record used by Head Start appears in Appendix B. The growth chart is based upon Stuart-Meredith standards (50, 51). Children falling below the third percentile in weight were considered to be underweight for their age. Due to the limitations of time, height was not used as a criterion for assessing growth. Children were recorded as being infected with intestinal parasites if records of the NIH Swab test and/or an examination of the child's stool specimen, procedures done as a regular part of the medical examination program of Head Start, indicated that the children were infected with intestinal parasites.

A hemoglobin value below 12.0 g per 100 ml blood is not considered anemic, as the usual standard for children is under 10.0 g per 100 ml (45). However, the Nutritionist and the student decided that children with hemoglobin values below 12.0 g per 100 ml should be identified. Marner considered the lower limit of acceptable hemoglobin values to be 12.0 g per 100 ml from studies of children two to six years of age (52). The Sullivan County Head Start Program also used hemoglobin values below 12.0 g per 100 ml as the criterion for giving children multiple vitamins with iron as medication for anemia or borderline anemia.

Throughout the study, the Nutritionist held planning and evaluation conferences with the student to guide her in her efforts to achieve the objectives of the study. The student's activity schedule during the field experience was made a flexible one, in anticipation of her need for blocks of time to collect data.

Approximately 30 hours were spent by the student collecting data on the Sullivan County nutrition program and on the 330 children enrolled in Head Start. Most of the hours were spent at Douglas School in Kingsport. Through personal interviews, examination of printed Head Start materials on job descriptions, observation of a Head Start class and several school lunch periods, and an informal questioning of a group of Head Start teachers, an understanding of the responsibilities of the staff members for the nutrition program was developed. A description of the responsibilities and efforts of the various staff members in effecting the nutrition program, including a list of some of the nutrition activities that teachers at Douglas School Head Start planned for their children, is included in Appendix C. Information obtained from Head Start staff on the treatment program for children found to have low hemoglobin values, low weights, or intestinal parasites is included in Appendix D.

Once the data had been collected from Head Start, additional hours were spent by the student during and after the field experience organizing and analyzing the data. A preliminary report was sent to the public health nutritionist in June, in order that she could begin working with Head Start staff and the public health nurses on follow-up activities for the children found to need this service. (See table 7, Appendix E, for an example of the procedure used to record nutrition related problems of children.)

Results

Tables 4 and 5 show some of the nutrition related data obtained from Head Start records. The data indicate that low hemoglobin values, low weights, and intestinal parasites were present in the study population.

TABLE 4

Nutrition related characteristics identified on initial
examination of children enrolled in Sullivan County
Head Start for the 1971-72 school year

Nutrition Related Characteristics	Number of Children with Characteristic	Percent of Total with Characteristic
Initial Hemoglobin (g/100 ml)		
> 12	258	78.2
< 12	<u>72</u> *	<u>21.8</u>
Total	330	100.0
Initial Weight (Stuart-Meredith Standards)		
> 3rd percentile	309	93.6
< 3rd percentile	<u>21</u>	<u>6.4</u>
Total	330	100.0
Intestinal Parasites		
Not infected	291	88.2
Infected	<u>39</u>	<u>11.8</u>
Total	330	100.0

* Includes one child with a hemoglobin value of 10 g/100 ml and three children with values < 10 g/100 ml (i.e. 1.2% of the study population were $\leq$ 10 g/100 ml and 1.0% were < 10 g/100 ml).

TABLE 5

Changes noted in hemoglobin and weight of children with
nutrition related problems after participation in
Sullivan County Head Start for the 1971-72
school year

Nutrition Related Characteristics	Number of Children	Percent of Total
[*] Hemoglobin		
Increase	13	56.5
Decrease	9	39.1
No change	<u>1</u>	<u>4.3</u>
Total	23	99.9
^{**} Weight		
Remained < 3rd percentile	9	50.0
Progressed to 3rd-97th percentiles	<u>9</u>	<u>50.0</u>
Total	18	100.0

^{*} Follow-up data were available for only 23 of 72 children with initial values < 12 g/100 ml.

^{**} Follow-up data were available for only 18 of 21 children with initial values < 3rd percentile.

More than 21 percent of the children had hemoglobin values below 12.0 g per 100 ml. One percent had hemoglobin values below 10.0 g per 100 ml. Data for weight and intestinal parasites show 6.4 percent of the children on initial examination weighed below the third percentile and 11.8 percent of the children were infected with intestinal parasites. Follow-up data were available for only a small number of children who on initial examination had low hemoglobin values or were underweight (below the third percentile). The follow-up data indicate that some children's hemoglobin values improved after treatment for low hemoglobin, while others regressed or remained unchanged. Seven children whose initial hemoglobin values were above 12.0 g per 100 ml showed a decrease on later records. Four of the seven children dropped below 12.0 g per 100 ml. Some children who had initial weights below the third percentile, according to Stuart-Meredith standards, progressed by the end of the school year to the 3rd-97th percentiles. Only a small percentage of the study population had both a hemoglobin value below 12.0 g per 100 ml and a weight below the third percentile (3.6 percent) or both a hemoglobin value below 12.0 g per 100 ml and intestinal parasites (2.7 percent). No children with weights below the third percentile were infected with intestinal parasites.

Discussion

A summary of studies pertaining to the prevalence of iron deficiency anemia in preschool children appears in table 6. In this report, those studies or parts of those studies that, in general, seemed to be comparable to the Sullivan County Head Start study population in age and economic characteristics were selected for discussion. In making comparisons

TABLE 6

Prevalence of iron deficiency anemia in preschool children

Investigator	Description of Sample	Criterion for Anemia	Percent Anemic
Miller and Saylor	330 Sullivan County, Tennessee, Head Start children	Hemoglobin concentration less than 10.0 g/100 ml	1.0
National Nutrition Survey (54)	Preliminary findings of the National Nutrition Survey in Texas-- children 5 years of age	Hemoglobin concentration less than 10.0 g/100 ml	1.0
Futrell et al. (55)	139 Negro preschool children in Mississippi-- 5 years old when studied	Hemoglobin concentration less than 10.0 g/100 ml	13.0
Haughton (56)	103 underprivileged preschool children in 3 health stations in New York City--predominantly Puerto Rican, some Negro some white, over 3 years of age	Hemoglobin concentration less than 10.0 g/100 ml	3.8
Howell (57)	2,500 children, 4-5 years of age in Philadelphia	Hemoglobin concentration less than 10.0 g/100 ml	2.0

TABLE 6 (continued)

Investigator	Description of Sample	Criterion for Anemia	Percent Anemic
Hutcheson and Hutcheson (44)	4-year summary of well children screened for anemia in 88 rural health centers in Tennessee-- 20,151 white children and 4,175 black children, 3-5 years of age	Hematocrit of 31% or less	7.1% of the white children 13.4% of the black children
Kravitz (58)	335 Chicago Head Start children	Hemoglobin concentration less than 10.0 g/100 ml	8.5
Pearson et al. (59)	7,000 Head Start children, 4-6 years of age Location: Houston, Tex. Jacksonville, Fla. Gainesville, Fla. Chicago, Ill. Augusta, Ga.	Hematocrit less than 31%	0.6 1.7 2.8 4.5 7.7
Pearson et al. (60)	More than 3,000 Negro children ranging in age from infants to teenagers, from lower socioeconomic groups in a small Florida city	Hematocrit less than 32% for 4-6 year-olds	4.5% of the 4-6 year-olds

TABLE 6 (continued)

Investigator	Description of Sample	Criterion for Anemia	Percent Anemic
Sandstead et al. (61)	Disadvantaged preschool children, 3-6 years of age selected from day-care nurseries in Nashville, Tennessee	Hemoglobin concentration less than 10.5 g/100 ml	5.1
Stine et al. (62)	190 Caucasian children and 518 Negro children, 4 years of age, from low income families in Baltimore, in an early school admissions project	Hematocrit of 33% or less	20.0% of Negro children and 5.0% of Caucasian children
Systems Development Project (45)	3,153 children, 3-6 years of age in Children and Youth Projects	Hemoglobin concentration less than 10.0 g/100 ml or hematocrit less than 31%	2.8

between the hematocrit and hemoglobin values, one should keep in mind that the hematocrit value is approximately three times the hemoglobin value; for example, a hematocrit of 36 is approximately equal to a hemoglobin value of 12 g per 100 ml (53). Because a hemoglobin value of less than 10.0 g per 100 ml was the criterion used to report the prevalence of anemia in many of these studies or summaries of these studies, this criterion was used in table 6 for the Sullivan County Head Start study.

In general, it can be seen that Sullivan County Head Start has a lower percentage of children considered to be anemic when it is compared to the other study populations in table 6. The preliminary findings from the National Nutrition Survey were that 1.0 percent of the five-year-olds had hemoglobin values less than 10.0 g per 100 ml. Other studies with findings which approximate the Sullivan County study are: the 0.6 percent reported by Pearson et al. for Houston, Texas, Head Start children and the 1.7 percent reported for Jacksonville, Florida, Head Start children four to six years of age who had hematocrit values less than 31.0 percent, and the 2.0 percent reported by Howell to have hemoglobin values less than 10.0 g per 100 ml. However, the study in Nashville, Tennessee, reported by Sandstead et al. shows a much higher percentage (5.1 percent) than the 1.5 percent found in the Sullivan County Head Start study for children who had hemoglobin values less than 10.5 g per 100 ml. The report by Hutcheson and Hutcheson of children in Tennessee health centers also shows higher percentages than the Sullivan County Head Start study.

Some possible reasons for the lower prevalence of anemia found in the Sullivan County Head Start study as compared to other studies of this age group are as follows: Hutcheson and Hutcheson reported that in 1970 there was a reduction in the percent of children found to be anemic in health centers in Tennessee when data for 1967-70 were compared (44). Perhaps the Sullivan County Head Start study is reflecting this reduction trend since it is the latest of the studies reported in table 6. Furthermore, Hutcheson and Hutcheson noted that there was a higher percentage of anemia found in black children as compared to white children in the Tennessee study (table 6). In the United States, nonwhites compose 12.5 percent of the total population (63). Nonwhites compose 16.1 percent of the total Tennessee population, but only 2.1 percent of the total Sullivan County population (9). In other studies, it has been observed that there is a higher prevalence of anemia in lower income groups and minority groups than in other segments of the population in the United States (64). Another possible reason for the lower prevalence of anemia found in the Sullivan County Head Start children when compared to other reported studies of this age group could be the lower percentage of nonwhites composing the Sullivan County population as compared to population data for Tennessee and the United States. The services of the Sullivan County Health Department, such as screening children and mothers for iron deficiency anemia and providing nutrition counseling at prenatal and well-baby clinics, could be other reasons (26).

Another criterion used in the study to assess the nutritional status of Head Start children was weight. The children with initial weights below the third percentile made up 6.4 percent of the total study population. This percentage represented more than would be expected to fall below the third percentile using the Stuart-Meredith standards.

When this 6.4 percent figure was compared to other studies of this age child, it was found that this figure compared very closely to a 6.5 percent figure reported for children falling below the third percentile in weight in a study of Summer Head Start children in Cleveland, Ohio, in 1965 (50). In another study of Head Start children in 1965, it was found that the distribution of heights and weights of a national sample of approximately 5,000 Summer Head Start children was not significantly different from the height and weight of the general population of the United States (65). Another study found that the median values for height and weight of 842 culturally deprived Caucasian and Negro children four years of age in four city schools in Baltimore, Maryland, were below the heights and weights of the standard population as published by Stuart (62).

Growth of the preschool child is related to the general health and nutrition of the child. A comparison of a child's physical measurements with those of other healthy children over time is helpful in determining, within limitations, if the child is growing normally. Watson and Lowrey state that body weight, in any group of measurements, is probably the best index of nutrition and growth because body weight sums all the increases in size. On the other hand, Jackson and Murphy state that

length is a better criterion than is body weight of adequate nutrition in infants and young children and that the criterion of relative weight for height is better than height or weight alone (66). A decreased rate of growth and, ultimately, abnormally low weight or stature may result from a deficiency of total caloric intake, of protein, or of another essential nutrient. Comparing the size of children in the study population with the size of normal children as defined by reference norms is valuable in screening groups of children in respect to nutritional status (49).

To assess the possible nutritional implications of the presence of intestinal parasites in Head Start children, literature was reviewed on *Ascaris lumbricoides* (the human roundworm), an intestinal parasite that was frequently found to be present in children infected with intestinal parasites in the Head Start study.

A report submitted by a World Health Organization Expert Committee in 1967 discussing the effects of *Ascaris* on nutrition states, "Heavy infections have . . . been associated with stunting, general undernutrition and avitaminosis" (46). A decreased appetite has been commonly manifested by individuals heavily infected and can seriously impede development, particularly in children living on diets that are sub-optimal or deficient. There is little doubt that ascariasis infection that is heavy or moderately heavy causes a continuous drain upon the host's nutriment supply, particularly proteins and certain vitamins, such as vitamin A and C, and "that this is related to chronic undernutrition in young children" (46). This drain on the host's supply of nutriment may be especially important to those individuals whose nutritional demands are

greatest. Heavily infected young children would be in a less favorable position to withstand other acute infections and stresses (46).

Other authors have indicated that parasitic diseases can act "synergistically" with malnutrition to retard growth and development and to decrease life expectancies (67). In its normal life cycle, the immature *Ascaris* migrates through the intestinal wall, to the lungs and returns to the intestines (68). This migration through the lungs is frequently a cause of hemorrhages and pneumonia-like pulmonary infections (67).

Dr. Nevin S. Scrimshaw of the Massachusetts Institute of Technology's Department of Nutrition and Food Science stated:

Malnutrition is generally synergistic with intestinal helminths. . . . Any infection, no matter how mild, has a significant and relatively prolonged detrimental effect on persons already in a poor nutritional state. Conversely, malnutrition sufficient to retard growth and development even without clinical signs of nutritional deficiency will so reduce resistance to infection that increased morbidity and mortality results. The combined effects (of malnutrition and infection) are more serious than would be predicted from the pathological behavior of either one alone. The interaction is truly synergistic (67).

Mr. Charles E. Fraser, reporting on the effects of parasitic infections and a study done in Beaufort County, South Carolina, stated that many of the local doctors had observed that an insignificant percentage of individuals with *Ascaris* developed infectious diseases or complications resulting from worm infestation. The local doctors' studies indicated:

direct evidence of correlation between (*Ascaris* infection and) malnutrition percentage rates by income levels of the various Negro communities, but far less evidence of local correlation between *Ascaris* infection and malnutrition rates among Headstart children (67).

Mr. Fraser further indicated that the frequency in which parasite infestation results in infections and complications such as nausea, temperature elevation, diarrhea, and even blockages of the intestines is uncertain. Those few studies that have tried to show a direct relationship of Ascaris to malnutrition were conducted in foreign countries. Mr. Fraser stated that in the United States probably at least one million children are infected by the whipworm (Trichuris) and the roundworm (Ascaris). These infections are common in the southeastern states. In a survey of 70 Head Start children, it was found that only one child had hookworms, but 18 out of 23 had other types of parasites (67).

Dr. E. J. Lease, reporting on intestinal parasites and nutritional status, stated that a study of 178 preschool Negro children from two to eight years of age in the Bluffton-Hilton Head Island area of South Carolina showed 70.3 percent of the children had intestinal parasites, Ascaris, or Trichuris, or both. The nutritional status was in most instances found to be inadequate and in all instances minimal (69).

In the Sullivan County Head Start study, 11.8 percent of the study population were found to be infected with intestinal parasites. Ascaris lumbricoides (roundworm) and Enterobius vermicularis (pinworm) were mentioned repeatedly in cases of intestinal parasites. However, because in most cases the type of parasite was not identified, it was not possible to make a general statement about which types of parasites were most prevalent in the study population. Though no significant relationships were noted between intestinal parasites and low hemoglobin values or low weight in this study, the previous discussion of intestinal parasites indicates that the presence of intestinal parasites is an additional stress to the

host and may be a contributing factor to malnutrition. Furthermore, the synergistic relation of intestinal parasites with malnutrition and retarded growth and development that may occur makes the presence of intestinal parasites in children with low hemoglobin values or low weight a matter of great concern in respect to nutritional status. Another observation of interest was that most of the children found to have intestinal parasites came from upper Sullivan County. A discussion with a Sullivan County Health Department environmentalist revealed that upper Sullivan County has mountainous areas and that several outdoor latrines or privies are in use there (70). These factors promote poor personal and environmental sanitation, a contributing factor to the spread of intestinal parasites to man.

Another relationship that needs to be examined further is the relationship between iron deficiency anemia and the effects on growth and intelligence. Howell, in a report on a group of 89 iron-deficient four-and-five-year-olds with mild to moderate degrees of iron deficiency, stated that standard tests demonstrated no difference in the intelligence quotients of the iron-deficient group of children and the non-iron-deficient controls. However, there were significant differences observed between the group of iron-deficient children and the control group when the children were tested for attentiveness, ability to focus on a learning task, and to orient oneself to and sustain one's interest in a learning task. An improvement in the pattern of attentiveness and learning was noted when the iron deficiency was corrected (57). Dr. Howell's reported findings agreed with results of studies by Sulzer and his associates at Tulane University. In work with Head Start children,

ages four and five years, Sulzer and associates found that the concentration ability and learning performance were particularly low in children with iron deficiency. Test performance was improved when the iron deficiency was corrected (71).

A study reported to the Senate Select Committee on Nutrition and Human Needs on Head Start children in Missoula, Montana, found that low hemoglobin levels of 10.0-12.0 g per 100 ml were associated with low mental performance (IQ falling below 95 on a group intelligence test). High mental performance (IQ over 100) was associated with normal hemoglobin levels of 12.3 or more. The study concluded that though the correlation was not particularly high, and, therefore, hemoglobin would not be good in predicting mental performance, it was shown in the study that high mental performance was not associated with levels of hemoglobin that were low. In addition, subjective indications were observed. Not only apathy and fatigue affected school performance, but also irritability and a decrease in all drives, with the exception of the pleasure drive, were observed in children with hemoglobins of 10.0-12.0 g per 100 ml. It was concluded that further work needs to be done to determine the psychological and mental effects of malnutrition in the United States among low-income families (72).

Whether iron deficiency may be a causative factor of growth retardation is a matter of controversy. In a study of infants, Hunter found no difference in weight gain or linear growth in ten infants with high hemoglobin levels when they were compared to ten infants with low hemoglobin levels (8.0-10.0 g per 100 ml) (73). However, Oski and associates reported poor growth in infants that were iron-deficient (74). In animal

studies, it has been shown that only when iron deficiency is so severe as to cause loss of appetite and decrease caloric intake is there growth retardation (75). The effects of inadequate nutrition upon mental development and growth are dependent upon such factors as the timing, the severity, and the duration of nutritional deprivation (53).

Summary and Conclusions

Iron deficiency anemia did not appear to be as great a problem in the Sullivan County Head Start population as in several other studies reviewed in this report. However, with more than 21 percent of the children having hemoglobin values below 12.0 g per 100 ml, there was evidence that iron deficiency anemia was a problem in this study population. Additional nutritional and/or non-nutritional stress could be enough to put these children into a serious state of iron deficiency anemia.

With more than 11 percent of the study population being infected with intestinal parasites, it appeared that intestinal parasites were a problem in this population and could have nutritional significance, draining the host of essential nutrients and causing other complications. The 6.4 percent of children weighing below the third percentile, according to Stuart-Meredith standards, reflected a similar value reported for another Head Start population and might have indicated children whose growth has been affected by poor general nutrition practices in earlier and current years.

There appeared to be very little association between low hemoglobin values (below 12.0 g per 100 ml) and children being below the third percentile in weight and/or being infected with intestinal

parasites. None of the 21 children who weighed below the third percentile showed evidence of being infected with intestinal parasites. The relationship of iron deficiency anemia to intestinal parasites, low weight, mental and psychological development, and growth retardation requires further investigation and was beyond the scope of this study.

The incomplete Head Start records, due to absence of children on the screening or examination day, to movement of children out of the area, or to other reasons, made interpretation of comparisons of initial records to later records limited in scope. However, the comparisons made for those children who had follow-up data available showed a 50 percent reduction in the number of children falling below the third percentile in weight, a 56.5 percent improvement in the number of children whose initial hemoglobin values were below 12.0 g per 100 ml, and a 100 percent improvement in the number of children whose initial hemoglobin values were 10.0 g per 100 ml or less. These improvements showed that the Head Start treatment and nutrition education program was having a positive effect upon the nutritional status of some Head Start children in respect to reducing the incidence of low hemoglobin values and low weights. Further investigation is needed to determine why Head Start methods have not been effective for some children: for those children whose hemoglobin values decreased, for those children who remained below the third percentile in weight, and for those children who remained below 12.0 g per 100 ml after treatment for low hemoglobin values. Follow-up data were not available on children found infected with intestinal parasites.

From the study of Sullivan County Head Start children, one can conclude that iron deficiency anemia (as defined by hemoglobin values below 12.0 g per 100 ml), low weight, and intestinal parasites were problems in the study population. Only a small percentage of the Head Start children had more than one of these characteristics. The children with more than one of these characteristics and the children with any of the characteristics for which the study population was screened need further follow-up measures through the cooperative efforts of the Sullivan County Health Department Nutritionist, the public health nurses, and the Head Start staff to eliminate or alleviate these problems and to improve the nutritional status of the children.

Of the Head Start records available, the Child Health Records and the teachers' height and weight records were very useful in evaluating the nutritional status of Head Start children in Sullivan County for low hemoglobin values, low weight, and presence of intestinal parasites. Observation of the Head Start nutrition program in Douglas School revealed the importance of various Head Start staff members in effecting the program. The student nutritionist made recommendations for follow-up activities on Head Start children found to have nutritional problems, recommendations for Head Start recordkeeping, and suggestions for program activities after analyzing the data collected on Head Start children and the Head Start nutrition program. Recommendations for follow-up and program activities are included in Appendix F. A report on the study of nutrition in the Sullivan County Head Start Program was sent to the Project Director of the Upper East Tennessee Economic Opportunities Authority, Inc. and to the Nutritionist of the Sullivan County Health Department.

The Head Start project has contributed greatly to the personal and professional development of the student. The insight and experience gained from participation in the planning, development, and execution of a study, in selecting, collecting, organizing, and analyzing data to make recommendations for the nutrition program and to suggest program activities, will be valuable to her future work as a public health nutritionist.

Before beginning the study, she thought that she needed to strengthen her skills in the areas of program planning and development. Skills can only be developed with practice. Conducting the study under the guidance of an experienced public health nutritionist provided an ideal opportunity to increase competence in the assessment of problems and the development of activities and evaluation procedures which are related to the program planning process.

The experience was especially meaningful because it gave the student an opportunity to work with other professionals in the community. Because she was an outsider coming in to examine the Head Start nutrition program, it was important that a good rapport be established and maintained with the Head Start staff. Care was taken not to disturb any Head Start activities during visits or to use too much of the staff's time in long interviews. Interview questions were planned before the interviews, and interviews were conducted when it was most convenient. In addition, care was taken to keep the Head Start Nutritionist informed of the student's activities, in order that she would not feel that the study was a threat to her or her program.

Because of the patience and guidance of the public health nutritionist throughout the planning, development, execution, and evaluation stages of the study and the generosity and cooperation of the Head Start staff during the study, the stated objectives were achieved. Correspondence with the public health nutritionist has indicated that steps have been taken to see that some of the recommendations for the Head Start nutrition program and suggestions for follow-up and other program activities from the study report are under way.

CHAPTER VI

CONCLUSION

The student considers her field training with the Sullivan County Health Department a very valuable contribution to her professional and personal development. Through orientation conferences with the Health Officer, the Public Health Administrator, supervisors, and other personnel in the different health department divisions and through participation in various activities of the Nutrition, Nursing, and Health Education Divisions, the student increased her understanding of the profession of public health and its practice. Her identification with the profession was strengthened as she functioned as a representative of the Nutrition Division and the Sullivan County Health Department on many occasions.

Through numerous conferences with the public health nutritionist about the Nutrition Division's programs and services and through participation in many activities, understanding and appreciation of the Nutrition Division and its relationship to the other divisions and to the health department as a whole were developed. There were many occasions to apply what had been learned in the classroom to actual health agency situations: interviewing and counseling patients in clinics, teaching classes at the diabetic clinic, and participating in a diabetic workshop, for example.

Activities of the public health nutritionist often involve working with other agencies in the community. The services provided by several of these agencies were explored through conferences with personnel

in their employment and conferences with the Nutritionist about her activities with them. A further insight was gained into the role of these allied agencies through observation and/or participation in some of the activities of several agencies. Participating in a diabetic workshop for Welfare Homemakers and conducting a study of nutrition in the Head Start Program were opportunities for the student to share the role of the public health nutritionist in working with these allies.

There were several occasions in which competency was increased through involvement in the planning, development, and execution of activities with and for professional and nonprofessional individuals and groups: a nutrition presentation to a parents' group, diabetic classes, and a diabetic workshop, for example. The Head Start project was particularly valuable in increasing the student's competency in the assessment of problems and the development of activities and evaluation procedures which are related to the program planning process.

Evaluation of her performance and understanding of the activities in which she was involved was important in promoting personal growth and development. Communication skills, particularly oral communication, and more practical experience with all kinds of people are areas in which she needs to direct her efforts towards self-improvement, thereby increasing her confidence in applying nutrition information to a variety of individuals.

Field training is an invaluable part of the public health nutrition graduate program in providing opportunities for applying academic knowledge to real life situations. As a result of the field training, the student is better prepared for a career in public health nutrition and for challenges with which she may be presented in the future.

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APPENDICES

APPENDIX A

CURRENT JOB SPECIFICATIONS FOR NUTRITIONISTS, STATE OF TENNESSEE, 1972

NUTRITIONIST

General Character of Duties

DEFINITION: Under general direction of a medical officer and/or nutritionist of higher classification, to be responsible for the public health nutrition program of a local health department; to perform related work as required.

EXAMPLES OF DUTIES: To work with staff members in coordinating the public health nutrition program with other phases of the public health program; to work with lay and official groups and agencies in promoting an integrated nutrition program; to assist in planning and participate in in-service training program; to prepare and compile educational materials; to prepare and deliver lectures and talks to lay, professional, and technical groups; to make dietary surveys; to provide group instruction and individual counseling to clinic patients; to keep records; to make reports.

Minimum Qualifications

EDUCATION AND EXPERIENCE: Graduation from an accredited 4-year college or university with a major in foods and nutrition or with a major in the basic sciences or education plus courses in food and nutrition equivalent to those required for a bachelor's degree in home economics with a major in foods and nutrition; 1 successfully completed year of graduate study with a major in human nutrition,

OR

an equivalent combination of education and experience, substituting 1 year of dietetic internship or 1 year of successful full-time paid employment in a related field in an approved institution, organization, or agency with a program of food and nutrition for the required year of graduate study.

KNOWLEDGE AND ABILITIES: Considerable knowledge of the principles and practices of nutrition as related to the control of disease and promotion of public health; knowledge of the aims and services of a health department at state and local levels; some knowledge of county government in Tennessee, and of the organization and resources of public and private organizations related to public health; as evidenced by a passing grade in a practical written test.

Ability to deal tactfully with the public and co-workers, to exercise good judgment in evaluating situations and making decisions, to express ideas clearly, concisely, and convincingly, to address an audience effectively, and to plan and direct the work of others; as evidenced by an investigation and a passing grade in an interview.

RELATIVE WEIGHTS OF EXAMINATION PARTS

Written Test, 4; Education and Experience, 4; Interview, 2.

Approved: Department of Personnel, July 1, 1957.

APPENDIX B

<i>(Exempt from Budget Bureau Approval)</i>	
CHILD HEALTH RECORD	NAME OF
IDENTIFICATION OF SCHOOL OR AGENCY	HOME ADDRESS
	DATE OF

Fig. 3 Child Health Record of Sullivan County Head Start.

CHILD HEALTH RECORD		NAME OF CHILD (LAST, FIRST, MIDDLE)	
IDENTIFICATION OF SCHOOL OR AGENCY		HOME ADDRESS (USE PENCIL AND KEEP CURRENT)	
		TELEPHONE NO.	
NAME OF MOTHER (LAST, FIRST, MIDDLE)		DATE OF BIRTH	PLACE OF BIRTH (CITY AND STATE)
		SCHOOL GRADE COMPLETED	
OCCUPATION OF MOTHER		WHAT LANGUAGE IS USUALLY SPOKEN IN THE HOME? ☐ ENGLISH ☐ OTHER	
NAME OF FATHER (LAST, FIRST, MIDDLE)		YEAR OF BIRTH	SCHOOL GRADE COMPLETED
USUAL OCCUPATION OF FATHER		NO. WEEKS UNEMPLOYED IN PAST YEAR	EMPLOYER
HEAD OF HOUSEHOLD IS ☐ FATHER ☐ MOTHER ☐ OTHER (SPECIFY)		DURING THE DAY, THIS CHILD IS USUALLY CARED FOR BY: ☐ MOTHER ☐ OTHER PERSON (GIVE NAME)	

FAMILY AND HOUSEHOLD

NAME	DATE OF BIRTH	LIVES WITH PATIENT		HEALTH PROBLEMS AND SCHOOL PROGRESS
		YES	NO	
FATHER				
MOTHER				
CHILDREN IN ORDER OF BIRTH (LIST ALL PREGNANCIES INCLUDING PATIENT)				
1.				
2.				
3.				
4.				
5.				
6.				
OTHERS IN HOUSEHOLD (SHOW RELATIONSHIP)				
1.				
2.				
3.				
4.				

ARE THERE ANY DISEASES WHICH "RUN IN THE FAMILY"?

☐ NO ☐ YES (DESCRIBE)

IN CASE OF AN EMERGENCY

PARENT OR GUARDIAN MAY BE CONTACTED AT: ☐ HOME☐ OTHER

TELEPHONE NO.

IF AN ILLNESS OR INJURY REQUIRES A DOCTOR'S ATTENTION,
CALL (NAME OF DOCTOR OR CLINIC)

TELEPHONE NO.

IF PARENT CANNOT BE REACHED, CONTACT:

☐ NEIGHBOR ☐ RELATIVE ☐ FRIEND

NAME

TELEPHONE NO.

THIS FAMILY IS ELIGIBLE FOR MEDICAL PAYMENTS UNDER

☐ BLUE CROSS - BLUE SHIELD ☐ PRIVATE HEALTH INS.☐ PUBLIC FUNDS (TITLE XIX, WELFARE, CRIPPLED CHILDREN)☐ NONE

PREGNANCY AND BIRTH HISTORY

PLACE OF DELIVERY (NAME OF HOSPITAL)			DELIVERED BY		
PREVIOUS PREGNANCIES					
TOTAL NO.	MISCARRIAGES	STILL BIRTHS			
MOTHER'S HEALTH DURING THIS PREGNANCY			☐ EXCELLENT ☐ OTHER (DESCRIBE)		
DELIVERY			☐ NORMAL SPONTANEOUS VERTEX ☐ OTHER (DESCRIBE)		

BABY'S BIRTHWEIGHT	DID BABY ARRIVE	☐ ON TIME ☐ EARLY BY ____ WEEKS ☐ LATE BY ____ WEEKS
ILLNESS OR COMPLICATION IN NEWBORN PERIOD		
☐ NONE ☐ OTHER (DESCRIBE)		

ILLNESS HISTORY

HAS CHILD HAD OR DOES HE HAVE:	YES	NO	DATE	DESCRIBE DETAILS OF ANY ITEM CHECKED "YES"
MEASLES (RUBEOLA)				
MUMPS				
CHICKEN POX				
RUBELLA (3-DAY OR GERMAN MEASLES)				
WHOOPING COUGH				
SEIZURES, FITS, OR SPELLS				
TONSILLECTOMY				
ANY HOSPITALIZATION				
EXPOSURE TO TUBERCULOSIS OR PERSON WITH CHRONIC COUGH				
FREQUENT BEDWETTING NOW				
ANY KNOWN CHRONIC DISEASE OR HANDICAPPING CONDITION				
OTHER SERIOUS ILLNESS				

DEVELOPMENTAL HISTORY

COMPARED WITH HIS BROTHERS AND SISTERS AND WITH OTHER CHILDREN HIS AGE, HAS THIS CHILD BEEN PARTICULARLY FAST OR SLOW IN:	FAST	ABOUT AVERAGE	SLOW	COMMENTS
WALKING, RUNNING, CLIMBING				
TALKING				
PLAYING WITH TOYS, COLORING, DRAWING				
UNDERSTANDING WHAT IS SAID TO HIM				
GETTING ALONG WITH CHILDREN HIS OWN AGE				
IS THIS CHILD CONSIDERED BY HIS MOTHER OR BY OTHERS TO BE PARTICULARLY:	YES	NO	COMMENTS	
"DIFFICULT" OR "DIFFERENT"				
HYPERACTIVE				
CLUMSY				

PHYSICAL EXAMINATION

HEIGHT		WEIGHT		AGE		BLOOD PRESSURE
IN. OR CM.	PERCENTILE	LB. OR KG.	PERCENTILE	YEARS	MONTHS	
DOES THE EXAMINATION REVEAL ANY ABNORMALITY IN:		ABNORMAL	NORMAL	NOT EXAMINED	DESCRIBE FULLY ANY ABNORMAL FINDINGS	
GENERAL APPEARANCE, POSTURE, GAIT						
SPEECH						
BEHAVIOR DURING EXAMINATION						
SKIN						
EYES: EXTERNALS						
OPTIC FUNDI						
EARS: EXTERNAL AND CANALS						
TYMPANIC MEMBRANES						
NOSE, MOUTH, PHARYNX						
TEETH						
HEART						
LUNGS						
ABDOMEN (INCLUDE HERNIAS)						
GENITALIA						
BONES, JOINTS, MUSCLES						
NEUROLOGICAL EXAMINATION						
OTHER						

DEVELOPMENTAL SCREENING EXAMINATION

	NORMAL FOR AGE	OTHER (EXPLAIN)	REMARKS
GROSS MOTOR FUNCTION			
FINE MOTOR AND MANIPULATIVE FUNCTIONS			
ADAPTIVE FUNCTION			
LANGUAGE FUNCTION			
PERSONAL - SOCIAL FUNCTION			

SUMMARY OF FINDINGS, TREATMENTS, AND RECOMMENDATIONS

ABNORMAL FINDINGS	ADVICE AND TREATMENT GIVEN	RECOMMENDATIONS OR FURTHER EVALUATION, TREATMENT OR SOCIAL OR EDUCATIONAL SERVICES.

SIGNATURE OF PHYSICIAN

DATE

PERIODIC HEALTH EVALUATION RECORD
(PRESCHOOL AND SCHOOL AGE CHILD)

NAME OF CHILD (LAST, FIRST, MIDDLE)

IDENTIFICATION OF SCHOOL OR AGENCY

DATE OF THIS EVALUATION

LOCATION OF THIS EVALUATION

☐ THIS IS FIRST EVALUATION (COMPLETE SEPARATE FORM CAP HS 30)

☐ A HISTORY AND EXAMINATION WAS PERFORMED
(DATE) (PLACE)

ILLNESS, INJURIES, HOSPITALIZATIONS SINCE LAST EVALUATION

SCREENING TEST SINCE LAST EXAMINATION

	NOT DONE	NORMAL	ABNORMAL	NOT TESTABLE	REMARKS
VISION					
HEARING					
TUBERCULIN					
ANEMIA					
URINALYSIS					
OTHER					

SCHOOL PROGRESS ☐ PROGRESSING NORMALLY WITH AGE GROUP ☐ OTHER (EXPLAIN)

TEACHER'S OBSERVATIONS ☐ NO APPARENT DIFFICULTY ☐ SLOW OR POOR READER
☐ HYPERACTIVE OR IMPULSIVE BEHAVIOR ☐ EPISODIC CHANGES IN STATE OF CONSCIOUSNESS, SEIZURES
☐ OTHER (EXPLAIN)

CHANGES IN HOME OR FAMILY SETTING SINCE LAST EXAMINATION (MOVES, NEW SIBLINGS, DIVORCE, UNEMPLOYMENT etc.)

☐ NONE ☐ OTHER (EXPLAIN)

HEALTH PROBLEMS NOTED BY PARENT OR CHILD

PERIODIC HEALTH EVALUATION RECORD
(PRESCHOOL AND SCHOOL AGE CHILD)

NAME OF CHILD (LAST, FIRST, MIDDLE)

IDENTIFICATION OF SCHOOL OR AGENCY

DATE OF THIS EVALUATION

LOCATION OF THIS EVALUATION

☐ THIS IS FIRST EVALUATION (COMPLETE SEPARATE FORM CAP HS 30)

☐ A HISTORY AND EXAMINATION WAS PERFORMED
(DATE) (PLACE)

ILLNESS, INJURIES, HOSPITALIZATIONS SINCE LAST EVALUATION

SCREENING TEST SINCE LAST EXAMINATION

	NOT DONE	NORMAL	ABNORMAL	NOT TESTABLE	REMARKS
VISION					
HEARING					
TUBERCULIN					
ANEMIA					
URINALYSIS					
OTHER					

SCHOOL PROGRESS ☐ PROGRESSING NORMALLY WITH AGE GROUP ☐ OTHER (EXPLAIN)

TEACHER'S OBSERVATIONS ☐ NO APPARENT DIFFICULTY ☐ SLOW OR POOR READER
☐ HYPERACTIVE OR IMPULSIVE BEHAVIOR ☐ EPISODIC CHANGES IN STATE OF CONSCIOUSNESS, SEIZURES
☐ OTHER (EXPLAIN)

CHANGES IN HOME OR FAMILY SETTING SINCE LAST EXAMINATION (MOVES, NEW SIBLINGS, DIVORCE, UNEMPLOYMENT ETC.)
☐ NONE ☐ OTHER (EXPLAIN)

HEALTH PROBLEMS NOTED BY PARENT OR CHILD

PHYSICAL EXAMINATION

HEIGHT		WEIGHT		AGE		BLOOD PRESSURE
IN. OR CM.	PERCENTILE	LB. OR KG.	PERCENTILE	YEARS	MONTHS	

DOES THE EXAMINATION REVEAL ANY ABNORMALITY IN:	ABNORMAL	NORMAL	NOT EXAMINED	DESCRIBE FULLY ANY ABNORMAL FINDINGS
GENERAL APPEARANCE, POSTURE, GAIT				
SPEECH				
BEHAVIOR DURING EXAMINATION				
SKIN				
EYES: EXTERNALS				
OPTIC FUNDI				
EARS: EXTERNAL AND CANALS				
TYMPANIC MEMBRANES				
NOSE, MOUTH, PHARYNX				
TEETH				
HEART				
LUNGS				
ABDOMEN (INCLUDE HERNIAS)				
GENITALIA				
BONES, JOINTS, MUSCLES				
NEUROLOGICAL EXAMINATION				
OTHER				

DEVELOPMENTAL SCREENING EXAMINATION

	NORMAL FOR AGE	OTHER (EXPLAIN)	REMARKS
GROSS MOTOR FUNCTION			
FINE MOTOR AND MANIPULATIVE FUNCTIONS			
ADAPTIVE FUNCTION			
LANGUAGE FUNCTION			
PERSONAL - SOCIAL FUNCTION			

SUMMARY OF FINDINGS, TREATMENTS, AND RECOMMENDATIONS

ABNORMAL FINDINGS	ADVICE AND TREATMENT GIVEN	RECOMMENDATIONS OR FURTHER EVALUATION, TREATMENT OR SOCIAL OR EDUCATIONAL SERVICES.

SIGNATURE OF PHYSICIAN

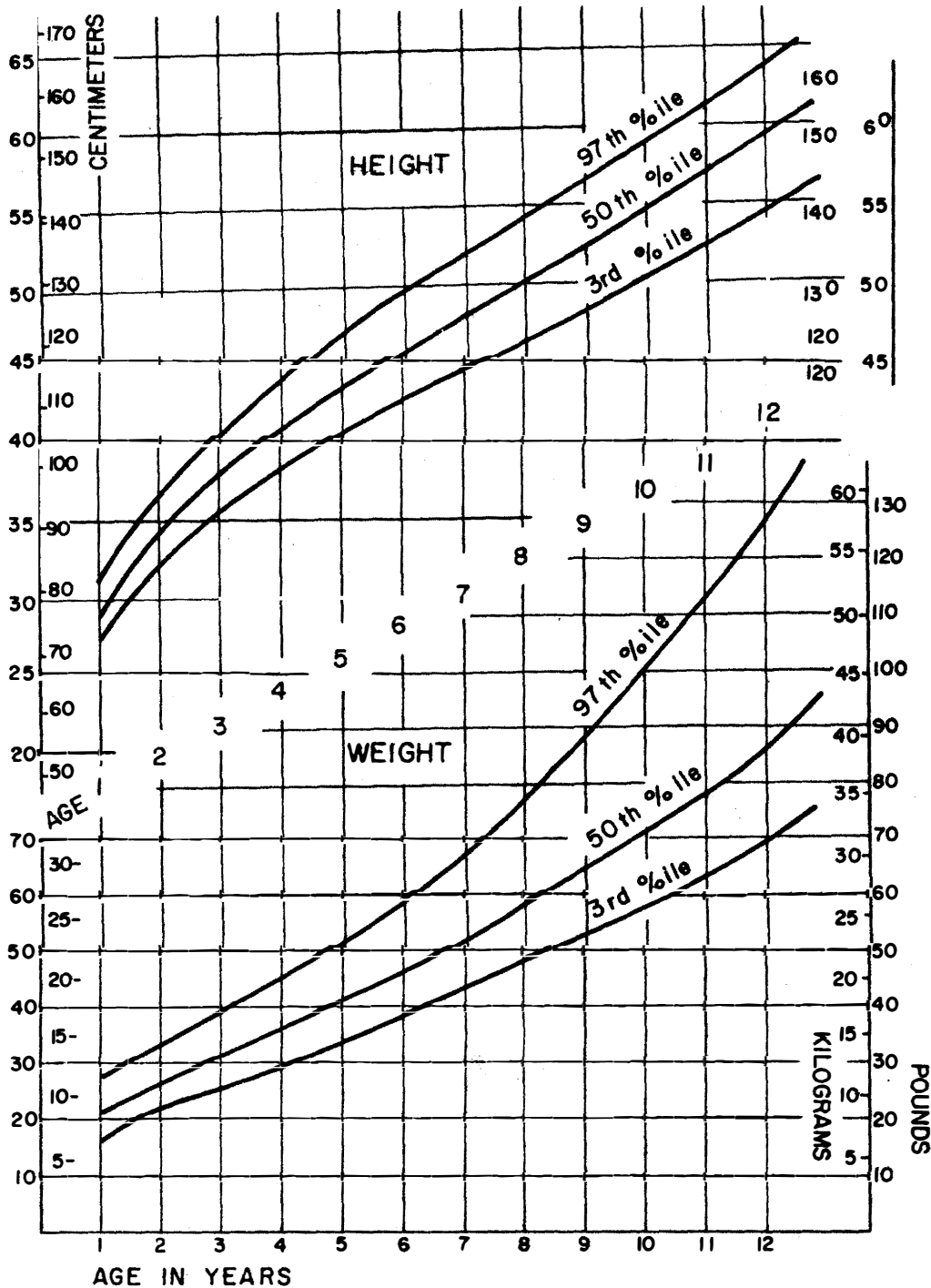
DATE

DIPHTHERIA, PERTUSSIS, TETANUS, (DPT)	ORIGINAL SERIES	#1	#2		#3	
	BOOSTERS (DT AFTER AGE 6)	#1	#2	#3	#4	#5
POLIO	FOR EACH IMMUNIZATION, INDICATE TYPE OF VACCINE (OPV-T = TRIVALENT ORAL; OPV-I = TYPE 1 ORAL; S = SALK (etc.))					
	#1	#2	#3	#4	#5	#6
MEASLES	HAD NATURAL INFECTION (NEEDS NO IMMUNIZATION)	LIVE VACCINE (SWARTZ OR EDMONSTON)	KILLED VACCINE #1	#2	#3	
SMALL POX	1ST VACCINATION (DATE)	PRIMARY TAKE ? ☐ YES ☐ NO	REVACCINATION #1 (DATE)	#1 TAKE ? ☐ YES ☐ NO	#2 (DATE)	#2 TAKE ? ☐ YES ☐ NO
OTHER (IMMUNIZATIONS)						

SCREENING TESTS RECORD (TO BE FILLED IN BY NIOSH REVIEWER)									
TUBERCULIN TESTS	DATE								
	RESULT								
VISION SCREENING	DATE	TYPE OF TEST	ACUITY (CHECK)			FUSION	COMMENTS		
			PASS	FAIL	NOT TESTABLE				
AUDITORY SCREENING (INCLUDE AUDIOGRAM IN PROGRESS NOTES.)	DATE	TYPE OF TEST	PASS	FAIL	NOT TESTABLE	COMMENTS			
HEMATOCRIT OR HEMOGLOBIN	DATE	RESULT			URINALYSIS OR URINE CULTURE	DATE	RESULT		

[illegible]

GROWTH CHART



I give my permission for _____ to have all necessary medical examinations, immunizations, laboratory tests, and treatments from the physicians, dentists, and other health personnel of the pre-school and school health programs

Date

Signature of parent or guardian

APPENDIX C

RESPONSIBILITIES AND EFFORTS OF STAFF MEMBERS OF THE UPPER

EAST TENNESSEE ECONOMIC OPPORTUNITIES AUTHORITY, INC.

IN THE NUTRITION PROGRAM OF HEAD START

1. Nutritionist--is responsible for the overall nutrition program of Head Start in the five counties under the supervision and coordination of the Upper East Tennessee Economic Opportunities Authority, Inc. (630 children). The person serving as Nutritionist has held this position for three years and is the first person to be employed for this position. She meets regularly with Head Start food service personnel of the lunchrooms under her supervision to discuss such subjects as menu planning, food costing, and purchasing. Some Head Start centers have lunch at nearby elementary schools not under the Nutritionist's supervision. Five lunchrooms are the number actually supervised by her. One is in Sullivan County, Douglas School in Kingsport, and four are in the other counties. In addition, she provides snacks for eight Head Start centers, three in Sullivan County and five in the other counties. She participates in pre-service and in-service programs for teachers. Upon request, she presents programs at Head Start parent meetings. Each year she tries to visit every Head Start class in all the five counties at least one time during the year. An activity is usually planned by the Nutritionist for the visit. She often tells a story and does a follow-up activity. This year she told a story about the peanut and showed Head Start children how to make peanut chews, a cookie or confection made with

dry milk, peanut butter, and other ingredients. Children often take these recipes home to use. Other visits to Head Start classes are made on the basis of request or need. Materials from the National Dairy Council and the United States Department of Agriculture are often used by the Nutritionist in her work with people.

2. Nurse--is responsible for the overall health program of Head Start in the five counties. She supervises and assists in scheduling health examinations and follow-ups, evaluations, and reporting of medical and dental services for Head Start children. Regularly scheduled meetings with social workers, who are responsible for keeping children's health records, review of quarterly health summary reports of the social workers, and review of an initial six-week and end-of-the-year progress report by teachers on the health status of Head Start children are activities of the Nurse that keep her informed of the health status of Head Start children. Often she is the liaison for social workers and teachers in referring Head Start children with special nutritional problems to the Nutritionist. The Nutritionist is then responsible for follow-up on these children, working cooperatively with other staff members, such as teachers, social workers, and school lunch managers, to seek and effect solutions to children's nutritional problems. Participation in pre-service and in-service programs for teachers and doing programs for Head Start parent meetings upon request are other responsibilities of the Nurse. She visits all Head Start classrooms at least once during the year. Other visits are made on the basis of request or need.

3. Social Workers--are responsible for obtaining the medical histories of Head Start children and keeping the medical records up-dated. In Sullivan County, there are three social workers, two in the Kingsport area, or lower Sullivan, and one in the Bristol area, or upper Sullivan. In addition, there is the Social Worker Coordinator, who supervises and coordinates the activities of all social workers in the five counties. Each social worker is responsible for an assigned section of Head Start children. She screens the records in her keeping, makes medical and dental appointments for children, sees that doctors' recommendations are effected, and makes referrals of children with special problems to the Nurse and other Head Start specialists. Home visits are made to children with special problems by a social worker, alone, or sometimes with a Head Start teacher.
4. Cafeteria Manager at Douglas School, Kingsport--is responsible for the operation and management of the cafeteria. Once a month, she meets with the Nutritionist to discuss such subjects as menus, food costing and purchasing, likes and dislikes of children, and ways to encourage children to eat. Food purchasing and management of food service personnel are her responsibilities. Head Start parents may eat lunch with the children on Tuesdays and Fridays as a learning experience to the parents. Some teachers have brought their classes to the cafeteria to observe cooking and baking activities and to bake some of the children's food products. At times, the Cafeteria Manager has given dough to a Head Start teacher for children to use in the classroom. A snack is given in the classrooms in the morning. At lunchtime, children may return for seconds. If teachers

have children who have nutritional problems, they often go to the Cafeteria Manager to ask her help. For example, a child who does not get breakfast at home may receive an extra snack in the morning. Nutritious lunches and snacks and introduction of Head Start children to a variety of foods and food preparations are concerns of the Cafeteria Manager.

5. Teachers at Douglas School, Kingsport--play an important role in the health, social, psychological, physical, and nutritional screening of Head Start children for referral of children with problems to specialists in the Head Start program. Through visits to the homes of Head Start children, they establish rapport with the families and are educators and resource people in making the families aware of the community resources available to them. At the beginning, middle, and end of the school year, they record the children's heights and weights. Teachers encourage, but do not force, children to taste the foods served for snacks and lunch. The teachers are the staff members, of all the Head Start staff, that see the children daily and who know the most about the children and their families.

The following is a list of some of the nutrition activities that teachers at Douglas School Head Start planned for their children:

- a. To help children learn about the different kinds of tastes, such as sweet, sour, and salty, a teacher had a tasting party of different-tasting foods and encouraged a class discussion on taste.
- b. Children learned about vitamin A in a Head Start classroom when a teacher led a class discussion on carrots and vitamin A.

The children learned that vitamin A was something good for their eyes, helping them to see at night. They also learned that a carrot was one of the foods that they could eat to get vitamin A. The children had an opportunity to taste the carrot raw and cooked in a tasting party.

- c. One day a teacher brought various types of pineapple to class-- fresh, canned in its own juice, canned in heavy syrup, canned in light syrup, chunked, sliced, and crushed--to let children experience the differences.
- d. Using food coloring to show how a celery draws up liquid and having a tasting party with celery and peanut butter were the ways one teacher helped her children to like celery.
- e. Peanut butter served on a piece of apple was a different experience at snacktime for some Head Start children.
- f. One teacher brought several kinds of spices to school for a children's smelling party.
- g. The experience of tasting raw dough and of rolling one's own cookie to be baked in the cafeteria kitchen was an activity in one Head Start classroom.
- h. Children made different salads from a variety of fruits and vegetables.
- i. One teacher had a tasting party in which children experienced the taste of an apple raw, dipped in white sugar, brown sugar, butter, and spices, and cooked in the form of applesauce, pies, and cakes.

- j. A teacher brought her electric skillet and let children make doughnuts from canned biscuits rolled in sugar. One day she let them make breakfast, using her skillet.
- k. Children enjoyed making their own milkshakes in a teacher's blender.
- l. Gingerbread, puddings, quick candies, ice cream, butter, and popcorn were made during cooking experiences by some classes. Teachers encouraged children to learn how to measure and stir and to compare the raw foods to the finished product.
- m. Making posters from magazine pictures of foods that the children had cut out was an activity to help the children learn about the Basic Four food groups and breakfast foods.
- n. The Peabody kit is a teaching kit that contains pictures on various topics, including food. These pictures of foods were used in class discussions with the children.
- o. Teachers took children on field trips to local farms and grocery stores.
- p. Children were allowed to help make snacks sometimes and were involved in serving and clean-up activities.
- q. In classrooms, children had a little play kitchen, and sometimes a little grocery store was set up in the classroom with which the children could play.

APPENDIX D

HEAD START'S TREATMENT PROGRAM FOR CHILDREN WITH LOW HEMOGLOBIN VALUES, LOW WEIGHTS, AND INTESTINAL PARASITES

1. Low Hemoglobin Values--Head Start children found with hemoglobin values below 12.0 g per 100 ml were given Tri-Vi-Sol with Iron or Fer-In-Sol under a physician's prescription. The form of the iron given was ferrous sulfate. Social workers or teachers took the vitamins to the homes of the children and discussed the problem with the parents, usually talking about the importance of eating foods high in iron and a well-balanced diet. If it were thought that the children would not receive the vitamins at home, the vitamins were given to the children at school. If possible, the children had their hemoglobin checked again several months later to see if their hemoglobin values had improved.
2. Low Weights--Teachers said that they encouraged children with poor appetites and low weights to taste and eat foods served for snacks and lunch, but did not force them to eat.
3. Intestinal Parasites--Children found infected with intestinal parasites were referred by Head Start teachers or social workers to the Sullivan County Health Department nurses. The nurses made home visits to give the Head Start children the medicine for treatment and to explain to the mothers and other family members about the spread of worms and the control measures.

APPENDIX E

TABLE 7

An example of the procedure used to record nutrition related problems of Head Start children^a

Identity Code of Children	1	Hgb. 2	Parasites	Wt. 1	2	Follow-up Recommended
School A-Teacher 1						
Case 1	N			B	N +	
Case 2	11.6			N		✓
Case 3	N			B	B ✓	✓
Case 4	N			B	B ✓	✓
School B-Teacher 1						
Case 1	11.3	12.8	++	B	B ✓	✓
Case 2	10.2			N		✓
Case 3	11.0	11.0	✓	N		✓
Case 4	11.9	11.5	-	N		✓
Case 5	N			+	N	
Case 6	11.4				N	✓
Case 7	11.9				n.g.	✓ *
School B-Teacher 2						
Case 1	12.8	11.1	--		N	✓
Case 2	11.9	11.4	-		N	✓

^aThe key for abbreviations and symbols used in this table is on the following page.

KEY TO TABLE 7

1. Hgb. = Hemoglobin

N = normal, ≥ 12.0 g/100 ml

n.g. = not given

1,2 = initial examination, follow-up data after participation
in Head Start Program

Δ = change noted between initial hemoglobin value and value
on later record

+ = improved

++ = improved from < 12.0 g/100 ml to ≥ 12.0 g/100 ml

✓ = no change

- = dropped

-- = dropped from ≥ 12.0 g/100 ml to < 12.0 g/100 ml

2. Parasites = Intestinal parasites

+ = infected

3. Wt. = Weight

B = below the 3rd percentile on the growth chart (Stuart-
Meredith standards)

N = normal, 3rd-97th percentiles on the growth chart

n.g. = not given

1,2 = initial examination, follow-up data after participation in
Head Start Program

Δ = change noted between initial weight and weight at the end of
the school year

+ = progressed to the 3rd-97th percentiles

✓ = remained < 3 rd percentile

4. Follow-up Recommended

✓ = follow-up is recommended

* = moved or dropped from Head Start

APPENDIX F

RECOMMENDATIONS FOR THE HEAD START NUTRITION PROGRAM AND SUGGESTIONS FOR FOLLOW-UP ACTIVITIES AND OTHER PROGRAM ACTIVITIES

The following are recommendations for improving the nutritional status of children who were enrolled in Head Start in Sullivan County for the 1971-72 school year who were found by the student nutritionist to have one or more of these problems, hemoglobin remaining below 12.0 g per 100 ml, hemoglobin decreased, or weight remaining below the third percentile at the end of the school year:

1. Follow-up measures by the Nutritionist of the Sullivan County Health Department in cooperation with the Head Start staff and the public health nurses of the Sullivan County Health Department are important to improving the nutritional status of Head Start children identified by the HeadStart study as having problems.

- a. Discussions by the public health nutritionist with the public health nurses of the Head Start children in the nurses' work districts who have problems will be helpful in determining why previous follow-up measures have not been effective (such as home visits to parents by members of the Head Start staff and public health nurses and treatment with multiple vitamins plus iron). These discussions will also be helpful in determining what measures might be more effective than the present ones or how the present ones can be made more effective than they have been. Such factors as the following may be basic:

considerations: Is the family receiving food stamps? If not, is it eligible for them? What further avenues of approach are there, such as recipes and community influence, that can be tried? Is there some physical or emotional factor that is involved that can be treated?

- b. The public health nutritionist offers consultation and counseling services to the Sullivan County Health Department public health nurses. From referrals of these Head Start follow-up cases from the public health nurses, the Nutritionist may want to make some home visits by herself or with the public health nurses to provide direct nutrition services to the follow-up cases.
- c. Members of the Head Start staff, such as the Nutritionist, the Nurse, the teachers, and the social workers, can help in the follow-up activities by locating children, suggesting why previous treatment measures may have been ineffective for some children, suggesting other methods that might be more effective than the ones that have been used, and helping to determine if the problems are of a nutritional origin, and, if not, suggesting what physical, social, or emotional factors might be involved.

2. For those children whose hemoglobin values decreased on Head Start records, it is recommended that the public health nutritionist see that follow-up measures are effected to investigate possible reasons for the decrease. Iron deficiency anemia may result from one or a combination of these factors: inadequate diet, blood loss, or impaired

absorption (76). Blood loss may be due to nosebleeds, accidents, or illness.

3. For those children whose weights remained below the third percentile at the end of the school year, it is recommended that the public health nutritionist see that follow-up measures are effected to investigate possible reasons for continued underweight. For example, children may not be eating the school lunch, which is a major contributor to children's daily nutritional needs, because they are too shy to eat, miss too much school, have emotional problems, or have other complications, such as surgery. The public health nutritionist's consultation with and enlistment of the help of the public health nurses of the Sullivan County Health Department and members of the Head Start staff will be important in effecting the follow-up measures suggested in recommendations two and three.

The following are recommendations for Head Start recordkeeping to increase the usefulness of Head Start records for the Head Start staff and other people interested in assessing the nutritional status of Head Start children in the future:

1. In order that height and weight records of children be comparable, recording of heights and weights of the children by Head Start teachers at the beginning and end of the school year (with three times a year being preferred) during the same specified month for all teachers is a good procedure to employ. If teachers and social workers each keep a copy of the children's heights and weights, they will have these records for future reference to note changes and to identify children with possible problems.

2. It would be especially helpful to anyone studying the heights and weights of Head Start children to have the Head Start teachers indicate on the growth chart of the Child Health Record the percentile where the child falls for height and weight each time that the teacher measures the child.

3. It would be helpful to anyone studying Head Start records to have the follow-up data (for hemoglobin, intestinal parasites, and other factors) recorded with the Child Health Record, instead of being on separate sheets from the Child Health Record. This procedure is the responsibility of the social workers. Recommendations two and three, if effected, will enable anyone studying the Head Start records to obtain all the information about a child's health and nutritional status from one source, the Child Health Record, and, therefore, save much time for anyone studying the records.

4. It is preferable that a child who is found to have a low initial hemoglobin have his hemoglobin rechecked one month after treatment with iron supplementation (77). If one month is not practical, then a recheck after two or three months will suffice. Rechecking hemoglobin values early will enable one to screen out those children who are not improving with the prescribed treatment and to take other measures to help these children (77).

The following are recommendations to increase the effectiveness of the Head Start nutrition program:

1. Pre-service and in-service meetings of teachers provide an excellent opportunity for the Head Start Nutritionist and teachers to consider how they can work together to use new materials and information

and ideas that the Head Start Nutritionist has obtained or developed since their last meeting, emphasizing the role of nutrition in the growth and development of the child.

2. By carefully considering the amount of money allowed per child and by utilizing the full amount allotted, snacks can be planned to provide more of the child's needs.

3. Since the Sullivan County Health Department Nutritionist is available for consultation, she can and should be considered a resource for professional consultation by the Head Start Nutritionist at frequent intervals to give support on program planning for teachers and parents, to study meals and snack suggestions, do nutrient computations, food costing, and other activities.

4. The following are suggestions for in-service nutrition education for teachers to be effected by the Nutritionist of Head Start:

- a. Hold roundtable discussions with teachers on nutrition activities and nutrition problems. Encourage these discussions on a school, county, and regional basis to give teachers an opportunity to share ideas with each other and to learn some new and different ideas from each other to use in their classrooms.
- b. Distribute lists of nutrition activities planned by different teachers.
- c. Another suggestion is to offer a county or regional workshop on nutrition and the preschool child for teachers and invite various resource people to conduct the program. Such resource people as the

Sullivan County Health Department Nutritionist, Extension Agents in the Expanded Food and Nutrition Program, and representatives from the Dairy Council of the Appalachian Area could be invited to participate.

5. The following are program suggestions for decreasing the incidence of iron deficiency anemia and the incidence of decreasing hemoglobin values in Head Start children:

- a. It would be interesting to conduct a project to evaluate the effectiveness of several methods of treatment of children with low hemoglobin values, but not severely anemic. In the project, five groups of Head Start children would be given the same nutritious lunches at school. Because a balanced diet containing all the nutrients is important to the best absorption and utilization of iron, a snack high in protein, high in iron, and high in vitamin C would be given to Group I each day at school (78, 79). Group II would receive the same snack as Group I, but would also receive prescribed iron medication for low hemoglobin from their teachers at school. Group III would receive the same snack as Group I, but would also receive prescribed iron medication for low hemoglobin from their parents at home. Group IV would not receive the high protein, high iron, high vitamin C snack, but a snack that meets the minimum standards for these nutrients according to Head Start standards and those agreed upon by the

Nutritionist of the Sullivan County Health Department and the Head Start Nutritionist for the project. Group IV children would receive prescribed iron medication for low hemoglobin from their teachers at school. Group V children would receive the same snack as Group IV children, but would receive their prescribed iron medication for low hemoglobin from their parents at home.

- b. Programs planned to emphasize the importance of eating foods high in iron and of eating a well-balanced diet based on the Basic Four food groups would be an integral part of the project (78, 79). These points would be emphasized to teachers, parents, and children participating in the project. Information could be brought to parents through parent meetings, home visits, and letters. Through in-service meetings with teachers and through teachers' activities and discussions with children in the classroom, these points could be emphasized.
- c. For evaluation purposes, it would be necessary at the beginning and end of the project (intermediate checks might be desirable) to do hemoglobin checks, height and weight measurements, recording of attention span, and other pertinent data, to compare the changes that have taken place among the different groups. It might also be desirable to do diet recalls on the children at

the beginning and end of the project to observe any effects on food habits, if this procedure is practical (57, 79).

- d. The project would be a cooperative endeavor of the Sullivan County Health Department Nutritionist, the Head Start Nutritionist, teachers, and other members of the Head Start staff.

6. To reduce the incidence of intestinal parasites in Head Start children, it is recommended that the Head Start Nurse in pre-service and in-service programs for teachers and social workers emphasize the importance of their teaching and encouraging hygiene for Head Start children and families. At school, parent meetings, and during home visits, the Nurse, teachers, and social workers can emphasize the importance of hygiene in preventing the occurrence of intestinal parasites in people.

7. The Head Start Nutritionist's and teachers' continued emphasis to children and parents in school, parent meetings, home visits, and parent counseling sessions of the importance of breakfast, the Basic Four food groups, iron-rich foods in the diet, and other basic principles of good nutrition remains an integral aspect of the Head Start nutrition program.

VITA

Anita Weinbren Miller was born in Knoxville, Tennessee, on November 5, 1947. She attended elementary and junior high schools in that city and was graduated from East High School in 1965. The following September she entered the University of Tennessee, and in August, 1970, she received a Bachelor of Science degree with a major in nutrition.

After graduation, she moved to Atlanta, Georgia, and worked as a therapeutic dietitian at Northside Hospital. She also attended Dekalb Junior College and Atlanta University while in Atlanta. In June, 1971, she moved to Chattanooga, Tennessee, and worked as a therapeutic dietitian at the Baroness Erlanger Hospital. Upon her marriage to Jeffrey Lawrence Miller of Chattanooga in July, 1971, she resigned her position and accompanied her husband to Knoxville, Tennessee.

She entered the Graduate School of the University of Tennessee in September, 1971, and received the Master of Science degree with a major in nutrition and a minor in public health education in March, 1973.

She is a member of the American Home Economics Association.