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A study of the factors affecting the recommended ratio of one public health nurse to 2,000 population.

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A STUDY OF THE FACTORS AFFECTING THE RECOMMENDED  
RATIO OF ONE PUBLIC HEALTH NURSE TO  
2,000 POPULATION

BY

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B. S. Degree, Simmons College, 1954

A field study submitted in partial fulfillment of the  
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## CHAPTER I

### INTRODUCTION

In 1946, representatives from national voluntary and official agencies, concerned with public health nursing, jointly prepared seven recommendations for community patterns of public health nursing services. Many of their recommendations were not new, but this was the first time in the history of public health nursing in the United States, that major voluntary and official agencies had prepared and sponsored a joint statement.<sup>1</sup> The agencies represented were: the American Red Cross, the Children's Bureau, the United States Department of Labor, the John Hancock Life Insurance Company, the Metropolitan Life Insurance Company, the United States Public Health Service, the American Public Health Association, and the National Organization for Public Health Nursing. The committee felt that these recommendations would help assure an adequate and sound nursing service for the citizens in local communities. The seventh recommendation, and the one with

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<sup>1</sup>Alma Haupt, "Planning Together for Field Service," Public Health Nursing, XXXVIII (November, 1946), p. 623.

which this study is concerned, was:

That one public health nurse should be provided for approximately every 2,000 people.<sup>2</sup>

The Committee on Administrative Practice of the American Public Health Association considered the recommendations at a meeting on November 11, 1946, and approved the recommendations with modification of item seven. This was changed to read:

That for a basic minimum local public health service for administrative purposes not less than one public health nurse is required for each 5,000 of the population. Where bedside nursing care of the sick at home is offered, additional public health nurses assisted by graduate nurses without public health nursing preparation and practical nurses or other auxiliary workers will be needed up to a ratio of one to 2,000 or one to 2,500 of the population.<sup>3</sup>

In 1947, only six communities had achieved the suggested ratio of approximately one nurse to 2,000 of the population. These were communities where the wealth of the population permitted adequate support of public health nursing services, and where the advantages of public health nursing

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<sup>2</sup>National Organization for Public Health Nursing, "Desirable Organization of Public Health Nursing for Family Service," Public Health Nursing, XXXVIII (August, 1946), p. 387.

<sup>3</sup>American Public Health Association, "Public Health and Bedside Home Nursing Services," American Journal of Public Health and the Nation's Health, XXXVIII (January, 1948), p. 82.

had been enjoyed for many years.<sup>4</sup>

#### Statement of the Problem

An investigation into selected factors presumed to affect the health status of a community to determine whether the ratio of one public health nurse to 2,000 population, as recommended by the National Organization for Public Health Nursing, is realistic for a selected community in southern New England.

#### Justification of the Problem

As a supervisor in a voluntary public health nursing agency the writer had noted that, although, the agency had added new programs and had broadened other programs, the number of staff nurses employed by the agency had not been increased. The writer was concerned with the adequacy of the nursing service being provided in the community. The only standard that public health nursing administrators had for the minimum number of public health nurses was the ratio of one nurse to 5,000 of the population or one nurse to 2,000 if bedside nursing was included.

If in the history of public health nursing in the United States only six communities had attained the recommended ratio, it was the opinion of the writer that the ratio

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<sup>4</sup>Ibid., p. 84.



of one public health nurse per 2,000 population was not realistic, and should not be used as the only factor in determining the number of public health nurses needed in a community.

#### Scope and Limitations

This study was conducted in a community in southern New England. Selected data from the District Nursing Association were analyzed for the years 1950 and 1956. These data were compared to the vital statistics of the community. The findings apply only to this community and cannot be generalized to other communities.

#### Preview of Methodology

The investigator interviewed board members of the District Nursing Association; the public health nurse director of the District Nursing Association; the chief of the Division of Vital Statistics of the State Health Department; the secretary of the Health Division, Council of Community Services; the superintendent of schools; and the town treasurer. Information was obtained about the number of staff nurses employed, the number of nursing cases and the visits made, the town population, and the natality and mortality data for the years 1950 and 1956. The data for 1950 and 1956 were compared and analyzed and recommendations were made.

### Sequence of Presentation

Chapter II includes a review of the literature and the statement of the hypothesis.

Chapter III describes the methodology used.

Chapter IV contains a presentation and discussion of the findings.

Chapter V includes the summary, conclusions and recommendations of the study.

## CHAPTER II

### REVIEW OF LITERATURE

In the beginning of visiting nursing in this country, there was no unity or similarity of work, and no standards regarding qualifications of nurses. Organizations interested in public health would engage nurses to visit and care for their particular patients. There was no concern about what was being done along similar lines by other organizations within the same community. Eventually, many cities found themselves with numerous public health nurses, employed by several organizations, providing special services such as tuberculosis programs, infant welfare programs, maternity programs, bedside nursing and school nursing; often without knowledge of what other public health nurses were doing. In the early part of the twentieth century communities became aware of this duplication of services, and began to study their resources and personnel. These studies resulted in the reorganization of their public health nursing services.<sup>1</sup>

At a meeting of state and divisional supervisors, held in Cincinnati, in June 1919, it was reported that for minimum

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<sup>1</sup>Annie M. Brainard, Organization of Public Health Nursing (New York: The Macmillan Company, 1919), pp. 122-25.

public health nursing services in a community, a rough estimate had been made of one public health nurse to every 5,000 population. The exact time and source of this statement was not known. The average had not been attained in any state at that time. Massachusetts had a ratio of one public health nurse to 9,000 population; Rhode Island and Connecticut had one nurse to 10,000 of the population. The state and divisional supervisors recommended to the National Organization for Public Health Nursing, that a committee be formed to study and to analyze the problems in public health nursing services; and to recommend a standardized number of public health nurses for a community of a given population.<sup>2</sup>

Two years later the National Organization for Public Health Nursing stated:

At the present time there are about 10,000 public health nurses in the United States; and on the established basis of one such nurse to every 2,000 of population, at least 40,000 additional nurses of this type should be available.<sup>3</sup>

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<sup>2</sup>"Report of Important Meeting," The Public Health Nurse, XI (July, 1919), p. 550.

<sup>3</sup>National Organization for Public Health Nursing, "Organization Activities," The Public Health Nurse, XIII (February, 1921), p. 101.

Through the years from 1923 to 1955 public health authorities, such as Emerson,<sup>4</sup> Hiscock,<sup>5</sup> Winslow,<sup>6</sup> Smillie,<sup>7</sup> Leavell and Clark,<sup>8</sup> and Hanlon,<sup>9</sup> have accepted the principle that one nurse for every 2,000 of the population was essential to provide a complete program of public health nursing services in a community.

In 1926, Ferrell stated that the ratio of one public health nurse for every 5,000 inhabitants, or one nurse for every 2,000 inhabitants, was an impossibility, at least for rural counties where it was difficult to provide an average of one nurse for every 20,000 inhabitants. He was of the opinion that economic conditions and public sentiment would have to change considerably before one public health nurse for every 10,000 population could become a reality. He added that the

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<sup>4</sup>Haven Emerson, "The Visiting Nurse a County Service," The Public Health Nurse, XV (July, 1923), p. 345.

<sup>5</sup>Ira V. Hiscock, Community Health Organization (4th ed. rev.; New York: The Commonwealth Fund, 1950), p. 147.

<sup>6</sup>C -E. A. Winslow, "The Larger Problem of Community Nursing," The Public Health Nurse, XX (July, 1928), p. 324.

<sup>7</sup>Wilson G. Smillie, Public Health Administration in the United States (2d ed. rev.; New York: The Macmillan Company, 1941), p. 54.

<sup>8</sup>Hugh Rodman Leavell and E. Gurney Clark, Textbook of Preventive Medicine (New York: McGraw-Hill Book Company Inc., 1953), p. 467.

<sup>9</sup>John J. Hanlon, Principles of Public Health Administration (2d ed. rev.; St. Louis: The C. V. Mosby Co., 1955), p. 318.

ratio would be influenced by varying conditions, and only time would establish a practicable maximum average per community.<sup>10</sup>

In 1934, the National Organization for Public Health Nursing did a survey of public health nursing and recommended that:

The number and character of the personnel of a public health nursing agency must vary with the size and type of the organization itself and the community which it serves. Such physical factors as area and concentration of population, in addition to ethnologic, sociologic, and economic factors, have a decided bearing on the number and character of the public health nursing staff. The extent and intensity of development of health and social resources within the community, that is, the number and kinds of other health and social agencies and the scope and adequacy of their programs, are also factors of influence.<sup>11</sup>

This same feeling was expressed in the literature by Wensley<sup>12</sup> and Freeman.<sup>13</sup> In 1954, McIver pointed out that while the number of public health nurses had increased rapidly during the first forty years of this century, the increase had not kept pace with the increase in population during the past

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<sup>10</sup>John A. Ferrell, "The Public Health Nurse and County Health Service," The Public Health Nurse, XVIII (June, 1926), p. 344.

<sup>11</sup>National Organization for Public Health Nursing, Survey of Public Health Nursing (New York: The Commonwealth Fund, 1934), p. 54.

<sup>12</sup>Edith Wensley, The Community and Public Health Nursing (New York: The Macmillan Company, 1950), p. 23.

<sup>13</sup>Ruth Freeman, Public Health Nursing Practice (2d ed. rev.; Philadelphia: W. B. Saunders Company, 1950), p. 53.

twelve years. She questioned whether it was reasonable to expect one public health nurse for each group of 2,000 persons.<sup>14</sup>

The National League for Nursing made the following assumption in 1957:

The standard of 20 public health nurses to 100,000 population (or 1 to 5,000 population) toward which we have been working, for sometime, is both desirable and attainable.<sup>15</sup>

They justified this ratio by stating that it was arrived at through experience and judgment; although, they fully recognized this ratio was not necessarily an ideal. They also questioned the feasibility or necessity of a national standard, and stated that localities and regions should work out standards in relation to their own needs and objectives of community service.<sup>16</sup>

Self Survey Guides were published by the National League for Nursing in 1953 for those interested in deriving a picture of the public health nursing programs in their communities. These guides were a tool by which a community could compare its services with the services of other localities. In discussing ratio of population to nurse, the

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<sup>14</sup>Pearl McIver, "Trends in Public Health," Nursing Outlook, II (July, 1954), p. 352.

<sup>15</sup>National League for Nursing, Public Health Nurses for the Nation (New York: 1957), p. 2.

<sup>16</sup>Ibid., p. 14.

commonly quoted recommendations were used. Mention was made that the public health nursing needs of each community varied according to health problems, other community health services, complexity of population, and social and economic factors.<sup>17</sup>

A statistical analysis of the activities of 513 public health nursing agencies was published in 1955 by the National League for Nursing. The study dealt with the kinds of nursing activities and the amount of nursing time spent in each activity. Statistics were given for interpreting the work of a nurse where such data were reported.<sup>18</sup>

It was apparent from the literature perused that through the years public health nurses have been seeking a standard to determine the number of nurses needed in a community. For the past forty years the ratio of one nurse to 2,000 of the population has appeared in the literature. More recently the need for data regarding selected factors presumed to affect the health status of a community has been stressed. The population has increased but public health nurses have not increased proportionately, consequently there has been little change in the ratio of public health nurses to population.

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<sup>17</sup> National League for Nursing, Self-Survey Guides for Public Health Nursing Service, ("National League for Nursing Publications: Voluntary Agency," Part IV, New York: National League for Nursing, 1953), p. 10.

<sup>18</sup> National League for Nursing, Nursing Activities of Public Health Nursing Agencies, (New York: National League for Nursing, 1955), p. 1.



Statement of Hypothesis

The number of public health nurses needed in a community cannot be determined solely by the recommended ratio of one public health nurse to 2,000 population.

## CHAPTER III

### METHODOLOGY

#### Selection and Description of the Sample

This study was done in a community immediately adjacent to a large metropolitan city in southern New England. It was a residential community which covered an area of five and nine tenths square miles, and was made up of seven villages. The roads were good and there was fairly adequate public transportation. There was one general hospital in the community with a bed capacity for one hundred and seventy-four patients. Residents also used the general hospitals and other medical facilities of the adjacent city. One school nurse was employed by the Board of Education to provide school nursing services for students in eight elementary schools and one senior high school. The State Department of Health provided nursing services for the two parochial elementary schools.

For this study only the services of the District Nursing Association for the years 1950 and 1956 were analysed. The year 1950 was selected because that was the most recent year that a United States census had been done. The second year selected was 1956 because the vital statistics were the most current at the time the data were collected.

The District Nursing Association was incorporated in January 18, 1921. One nurse was employed by the board of directors. The services included a bedside nursing program, a tuberculosis program, an antepartum program, a postpartum program, and an infant program. The Association was financed by an appropriation from the United Fund, fees from patients, and tax funds. The tax funds were appropriated by the town to assist in providing public health nursing services. There was a general reorganization of the Association in June 1943. The board of directors, at this time, decided to purchase public health nursing services from the District Nursing Association of the adjacent city. This step was taken because the board felt qualified supervision and administration would be provided for the staff and the agency, and more service would be provided for holidays, Sundays, and vacation time. The Association has continued to purchase nursing service up to the present time. In addition to providing the nurse, the agency from which the service was purchased was responsible for records, reports, and telephone service.

#### Sources of Data

Data for the study were obtained from the statistical records of cases and visits of the District Nursing Association for the years 1950 and 1956. Natality data were procured from the Vital Statistics of the United States, Volume II, 1950 and Volume I, 1956. Mortality data were acquired from Volume III,

1950, Vital Statistics of the United States, and Volume II for 1956. Unpublished population data were obtained from the Chief of the Population Division, Bureau of the Census, Washington, D. C. Population data were also obtained from the report of Vital Statistics for Rhode Island, 1957.

#### Procurement of Data

Permission was obtained from the president and treasurer of the District Nursing Association to study the activities of the Association. To determine the type of data available for the study, unstructured interviews were held with the public health nurse director of the District Nursing Association from which service was purchased; the chief of the Division of Vital Statistics of the State; and the secretary of the Health Division of the Council of Community Services. The school census and school registration data were obtained from the superintendent of schools. The amount of nursing service provided in the parochial schools was obtained from the nursing director of the State Department of Health. In all contacts, the investigator identified herself as a student doing a study. Each of the persons contacted gave generously of their time and knowledge to furnish complete information.

## CHAPTER IV

### FINDINGS

#### Presentation and Discussion of Data

Between the years 1950 and 1956 the total population of the community studied increased from 13,927 to 17,400. This represented an increase in population of 3,473 or 24.9 per cent. The age groups of the population were available from the United States Bureau of Census for 1950 but not for 1956, therefore, no comparison could be made.

The District Nursing Association provided public health nursing in the community equivalent to the services of one and one half staff nurses; the Department of Education employed one school nurse. This represented one public health nurse to 5,571 persons in 1950 and one public health nurse to 6,960 persons in 1956, but the nurses were not evenly distributed among the population. The one school nurse who was employed by the Department of Education was responsible for the health of the children in the public schools. There was approximately one nurse available for 1,758 public school children registered in 1950, and one nurse for 2,271 children in 1956. The district nurses were responsible for all other public health nursing services in the community. The ratio

of public health nurse to population in 1950, excluding the school nurse, was one to 8,113 persons, and in 1956 one to 10,086. To attain the ratio of one nurse to 2,000 of the population, approximately 6.1 nurses should have been employed in 1950 and 7.5 nurses in 1956. According to the above, the number of public health nurses per population was not adequate in 1950, and became less adequate in 1956.

All referrals and all requests for service were answered by the District Nursing Association. Table I shows the total population of the community for the years 1950 and 1956, the cases and visits of the District Nursing Association for those years and the cases in relation to the population.

TABLE I

TOTAL POPULATION, TOTAL CASES AND VISITS  
OF THE DISTRICT NURSING ASSOCIATION  
1950 AND 1956

Year	Population	Total DNA* Cases	Total DNA* Visits	Cases per 100 Population
1950	13,927	484	2,572	3.47
1956	17,400	473	2,234	2.31

\*District Nursing Association

The population increased in 1956, the District Nursing Association cases and visits decreased, and the cases per 100 population decreased. It would seem reasonable to assume that as the population increased there would be more births and an increase in the population forty years of age and over. The increased older population should result in a greater incidence of chronic illness, thus requiring more service from the public health nurse. Relatively few persons in the community used the services of the public health nurse in 1950 and the number became smaller in 1956. Two possible reasons might have been responsible for the decrease in the use of the public health nursing services. The citizens of the community might not have been aware of the nursing service provided by the District Nursing Association, or because of the shortage of staff nurses the service might not have been adequate and families made other plans for nursing care.

There were no maternal deaths for either the year 1950 or 1956. Table 2 shows the live births, stillbirths, deaths under 28 days, and deaths under 1 year.

There was an increase of 89 births from the years 1950 to 1956. The number of premature births for 1950 was not available. Of the 356 births in 1956, 20 or 5.6 per cent were premature births. Prematurity was judged by birth weight, a child weighing 2,500 grams (5 pounds 8 ounces) or less being considered premature. There was a decrease of three stillbirths in 1956. The infant mortality rates were the same for

both 1950 and 1956. In 1950, eight of the ten infant deaths occurred in infants under 28 days and in 1956 all were in infants under 28 days. This factor seems to indicate a need for further study of the causes of deaths in infants under 28 days.

TABLE 2

LIVE BIRTHS, STILLBIRTHS, NEONATAL AND  
INFANT DEATHS 1950 AND 1956

Event	1950		1956	
	No.	Rate	No.	Rate
Live Births	267	19.2*	356	20.5*
Stillbirths	8	29.9**	5	14**
Deaths under 28 days	8	29.9**	10	28.1**
Deaths under 1 year in- cluding deaths under 28 days	10	37.5**	10	28.1**

\*Rate per 1,000 population.

\*\*Rate per 1,000 live births.

Table 3 shows the volume of maternity, infant, and preschool cases and visits of the District Nursing Association for the years 1950 and 1956.



TABLE 3

MATERNITY, INFANT AND PRESCHOOL CASES AND VISITS, AND  
 AVERAGE VISITS PER CASE OF THE DISTRICT  
 NURSING ASSOCIATION 1950 AND 1956

Type of Visit	1950			1956		
	Cases	Visits	Average Visits per Case	Cases	Visits	Average Visits per Case
Maternity	99	407	4.1	91	160	1.7
Infant	204	461	2.2	180	469	2.6
Preschool	5*	5	1	75	133	1.7

\*Sept. 1950 to Dec. 1950.

There was a small decrease in maternity cases, with nine fewer cases in 1956 than in 1950. There was a considerable drop in visits, with 247 fewer visits made in 1956 than in 1950. This represented an average drop in visits of 2.4 per case. The Association did not keep separate figures for antepartum and postpartum cases, but from the 1.7 average visits per case in 1956, it can be seen that very few of the 91 maternity cases received two visits, or a minimum of one visit before delivery and one visit following delivery.

In Self-Survey Guides for Public Health Nursing Service it has been recommended that:

A public health nursing program for patients should include nursing care and instruction. The public health nurse should help to interpret the importance of early and regular medical care, the physician's instructions, principles of good hygiene and nutrition, physical changes during the maternity cycle, and should instruct the parents in the development and care of the baby.<sup>1</sup>

If more staff nurses had been employed by the Association, it is probable that the maternity program would have been available to more people in the community.

In 1956 more infant visits were made to fewer infants than in 1950. Hanlon recommended that at least two visits should be made during the first month of the infant's life. One of these visits should be made within forty-eight hours following return home from the hospital. It is during this period of adjustment to the household cares and the new infant that the postpartum patient appreciates help from the public health nurse. A third visit should be made about the sixth month and the fourth visit between the ninth and twelfth month. One of the primary purposes of the sixth and ninth month visit is the promotion of the protective treatment of the baby against whooping cough, smallpox, diphtheria,

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<sup>1</sup>National League for Nursing, Self-Survey Guides for Public Health Nursing Service, ("National League for Nursing Publications: Public Health Nursing Program," Part II, New York: National League for Nursing, 1953), p. 7.

tetanus, and poliomyelitis.<sup>2</sup> If this recommended schedule of visiting had been used in 1950, 816 visits would have been made to 204 cases, an increase of 355 visits; and in 1956, 720 visits would have been made to the 180 cases, an increase of 251 visits. The visits per case were lower than the recommended minimum in both 1950 and 1956. To provide even the minimum visits more staff nurses would be needed. Of the total number of infant cases in 1950, 71 were new admissions which represented 28 per cent of the infants born in 1950. Seventy-three infants were admitted in 1956 which represented 20.5 per cent of the live births. The percentage of infants admitted was small for both years. It would seem that the Association had a responsibility to provide more extensive infant service for this community as the Association was accepting tax money to provide public health nursing services.

The District Nursing Association also conducted a child health conference. The conference met semi-monthly in two areas of the community in 1950 and monthly in one central area in 1956. The total attendance at the conference was 34 in 1950, and 102 in 1956. It was interesting to note that in 1956 there were fewer infant cases but the average visit per case was higher than in 1950, and attendance at the child health conference increased. This might indicate that the

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<sup>2</sup> John J. Hanlon, Principles of Public Health Administration (St. Louis: C. V. Mosby Company, 1955), p. 499.

public health nurse helped mothers to sustain interest in the importance of periodic health examination by making more frequent home visits. This is an area in which further study could be made to determine whether public health nursing visits influence attendance at child health conferences. The writer is aware that factors other than the home visits made by the public health nurses need to be taken into consideration in regard to conference attendance. It is possible that with improved economic conditions of families, more infants were supervised by private physicians. However, in many instances one of the functions of a child health conference is the immunization program. Today with the emphasis on prevention, the nurse assists in the control of communicable diseases by teaching the value of immunizations.

Only five pre-school cases were visited for the year 1950, as the program was transferred from the State Department of Health in September 1950. In 1956 there were 75 cases and 133 visits were made, which represented an average of 1.7 visits per case. The pre-school period is an important period in the physical, mental, and emotional development of the child. Many of the personality difficulties in later life are attributed to the parent child relationship in this period. The public health nurse can provide supportive services to help the parents have a better understanding of the broad physical and emotional needs of children. Relatively few of the parents of the community studied received this supportive

service from the public health nurse. The breakdown by age from the school census was available for the years four through twenty. In 1950 there were 200 children age four and in 1956 there were 282. From the number of children in the four year old group which is only one year of the pre-school period, very few of the total four year old children were visited by the district nurse. When the Association accepted the responsibility for the pre-school program in September 1950, no provision was made for obtaining additional staff. This meant that other programs would receive fewer nursing visits. In this Association the greatest drop in visits occurred in the maternity program. The Association was following the recommendation for a family centered service but carrying out this recommendation was unrealistic without having additional staff nurses.

Non-communicable cases consisted of all morbidity conditions in which bedside nursing services were rendered. Table 4 shows the volume of service rendered by the District Nursing Association in 1950 and 1956 to patients needing bedside nursing services.

TABLE 4

NON-COMMUNICABLE CASES AND VISITS, AND AVERAGE VISITS PER CASE OF THE DISTRICT NURSING ASSOCIATION 1950 AND 1956

Year	Cases	Visits	Average Visits per Case
1950	133	1356	10.1
1956	90	1185	13.1

There were 43 fewer cases in 1956 than in 1950, with a consequent drop of 171 visits in 1956. The average visits per case increased by two in 1956. More visits were made on an average to fewer cases in 1956. Table 5 shows the major causes of death for the years 1950 and 1956.

TABLE 5  
MAJOR CAUSES OF DEATH FOR 1950 AND 1956

Causes of Death	Total Number of Deaths	
	1950	1956
All Causes	129	138
Diseases of the heart	58	53
Malignant neoplasms	14	28
Vascular lesions affecting central nervous system	9	20
Symptoms of senility	2	9
Diseases of early infancy	not listed	9
Diabetes Mellitus	1	6
Accidents	9	3

There was a slight increase in the number of deaths between the years 1950 and 1956, and an increase in the chronic diseases, such as malignant neoplasms, vascular lesions affecting the central nervous system, symptoms of senility, and diabetes mellitus as the cause of death. Recently Terris

stated:

To meet its responsibilities for the chronically ill, the public health profession must unequivocally reject the 1:5,000 ratio as the goal for public health nursing personnel. This ratio is obsolete, unrealistic, and a serious block to the rapid growth in public health nursing which is urgently required.<sup>3</sup>

With the chronic diseases increasing as the cause of death, it can be assumed that the public health nurse provided nursing service for some of these patients who required more service than would be required for patients suffering from short term illnesses. On the other hand, the Association may not have received more requests for service because the residents might have realized that the present nursing staff was kept exceptionally busy, or the residents may have been unaware of the part-time nursing service available in the community. It cannot be assumed that the community was unusually healthy because the number of deaths did not greatly increase between the years 1950 and 1956. Freeman warned against the over-estimation of the importance of mortality rates as a criterion for program determination. She said that the mortality rate does not show the number of patients with arthritis or schizophrenia who may not die as a consequence of their illness, but who may need considerable nursing service.

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<sup>3</sup>Milton Terris, "The Changing Face of Public Health," American Journal of Public Health and the Nation's Health, XLIX (September, 1959), p. 1115.

Many patients who formerly died are now kept alive by the antibiotics and they require increased treatment and education.<sup>4</sup>

Communicable disease visits, other than tuberculosis, represented a very small percentage of the total number of cases and visits. In 1950 there were two cases to whom three visits were made; and in 1956 there were three cases to whom three visits were made. The average visit per case for 1950 was 1.5 visits and in 1956, one visit. Table 6 shows the number of cases reported to the State Department of Health for this community in the years 1950 and 1956.

TABLE 6

COMMUNICABLE DISEASES REPORTED TO THE STATE DEPARTMENT  
OF HEALTH 1950 AND 1956

1950		1956	
Diagnosis	No. of Cases	Diagnosis	No. of Cases
Chickenpox	33	German Measles	67
Scarlet Fever	4	Mumps	38
Diarrhea	1	Chickenpox	35
Unknown Etiology			
Meningitis	1	Scarlet Fever	6
Polio	1	Measles	2
Whooping Cough	1	Infectious Mononucleosis	1
Total	41	Total	149

<sup>4</sup>Ruth B. Freeman, Public Health Nursing Practice  
(Philadelphia: W. B. Saunders Company, 1958), p. 265.



Tuberculosis visits and cases of the District Nursing Association are shown in Table 7.

TABLE 7  
TUBERCULOSIS CASES AND VISITS  
OF THE DISTRICT NURSING ASSOCIATION 1950 AND 1956

Type of Visit	1950		1956	
	Cases	Visits	Cases	Visits
Pulmonary	21	90	23	76
Pulmonary Arrested	12	22	--	--
Deferred	2	--	--	--
Contacts	6	26	11	15
Family Visits	--	28	--	--
Total	41	166	34	91

There were seven less cases of tuberculosis in 1956 than in 1950, and seventy-five fewer visits were made in 1956 than in 1950. The average visit per case in 1950 was four to all tuberculosis cases, and 4.3 visits to all pulmonary cases. In 1956, the average visit per case was 2.6 to all tuberculosis cases but 3.3 visits to all pulmonary cases. The average visit per case to all tuberculosis cases decreased by 1.4 visits in 1956 and decreased by one visit to all pulmonary cases. The Division of Tuberculosis Control of the State Department of Health maintains a Central Case Register which

is a source of statistical information serving as a guide in administration of the tuberculosis control program. Duplicate case registers are set up in local nursing agencies. Table 8 shows the cases reported for this community in 1950 and 1956.

TABLE 8

TUBERCULOSIS CASES REPORTED TO THE STATE DEPARTMENT  
OF HEALTH 1950 AND 1956

Tuberculosis	1950	1956
Total Cases	82	102
Pulmonary	77	98
Other Forms	2	4
Primary Infections Active	3	0

One tuberculosis death was reported in 1950, and none in 1956. There were two patients hospitalized in 1950 and six in 1956. Twenty more tuberculosis cases were registered in 1956 than in 1950. Of the total cases reported to the State Department of Health, the Association visited approximately 50 per cent in 1950, and only 33.3 per cent in 1956. After a study made in 1958 by the Division of Tuberculosis Control of the State Department of Health and the Tuberculosis and Health Association, of non-hospitalized tuberculosis patients, two

of the recommendations were:

A policy should be established that every newly reported patient with active tuberculosis and his family be visited by a public health nurse.

It is recommended that employment of additional personnel be considered by some nursing agencies and health departments to provide more adequate nursing service to tuberculosis patients and families.<sup>5</sup>

To follow through on the first recommendation the Association would have had to employ additional nurses. The visits for the control of tuberculosis were inadequate in 1950, and became less adequate in 1956.

In reviewing the volume of nursing service rendered in 1950 and in 1956, the records showed a total of 484 cases and 2,572 visits for the year 1950, and 473 cases and 2,234 visits for 1956. There was a 2.3 per cent decrease in cases and a 15.1 per cent decrease in visits. There was also a decrease in the average visit per case. In 1950, the average visit per case was 5.3 and in 1956 it decreased to 4.7 per case. Table 9 shows the total days worked and the total visits made by the district nurses in 1950 and in 1956.

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<sup>5</sup>Division of Tuberculosis Control of the Rhode Island State Department of Health, and Rhode Island Tuberculosis and Health Association, A Report of the Non-Hospitalized Tuberculosis Patient in Rhode Island (Rhode Island Tuberculosis and Health Association, 1958), pp. 32-33.

TABLE 9

TOTAL DAYS WORKED AND TOTAL VISITS MADE  
BY THE DISTRICT NURSING ASSOCIATION 1950 AND 1956

Year	Total Days Worked	Total Visits
1950	315.75	2572
1956	330.25	2234

In 1956, 14.5 more days were worked but there was a decrease of 338 visits or 15.1 per cent fewer visits in 1956. The percentage distribution of home visits by type of visits for the years 1950 and 1956 are shown in Table 10.

The one per cent increase in the percentage distribution of home visits to patients with non-communicable diseases may explain the decrease in visits in 1956 even though there were 14.5 more staff days worked. It can be assumed that if the nurse spent more time in giving bedside nursing service there would be a decrease in the total visits of all services even though there were 14.5 more staff days worked. Bedside nursing visits take longer on an average than health instruction visits. The drop in the percentage distribution of maternity and tuberculosis visits was reflected in an increase in infant and pre-school visits.

TABLE 10

PERCENTAGE DISTRIBUTION OF HOME VISITS BY TYPE OF VISIT  
DISTRICT NURSING ASSOCIATION 1950 AND 1956

Type of Visit	1950	1956
Non-communicable disease	52.0	53.0
Communicable other than TB	0.1	1.3
Maternity	15.8	7.1
Infant	17.9	20.9
Pre-school	0.1	5.9
Tuberculosis	6.5	4.0
Other	7.6	7.8

In 1956, there was an increase in total population, school population, total number of births, tuberculosis cases, and communicable diseases; however, there was a decrease in the crude death rate, the number of stillbirths, and a general decrease in the number of cases and visits of the District Nursing Association.

It cannot be assumed that the public health nursing needs of this community were being met because all requests for service were answered. The community may not have been requesting the service because the residents were aware that the number of nurses employed by the Association could not

provide the services, or the residents may not have been aware of the Association and its functions. To apply the standard of one nurse to 2,000 of the population does not seem realistic without a study of the health status of a community, the kinds and extent of the health programs, and the amount and kind of nursing service required. The number of public health nurses needed also depends on other factors such as, whether the community is rural or urban, the cultural and social groups, the per capita income, and the complexity of the population. If the Association, in the community studied, were able to employ the number of nurses at the ratio of one per 2,000 population, it is questionable whether such an extension of public health nursing services would be of value to the community without an expanded and continuous program of community health education. What the community needs and what it wants from nursing service may be entirely different.

As originally stated, this study was an investigation of selected factors presumed to affect the health status of a community to determine whether the ratio of one public health nurse to 2,000 population, as recommended by the National Organization for Public Health Nursing, was realistic for a selected community in southern New England. The hypothesis that the number of public health nurses needed in a community cannot be determined solely by the ratio of nurse to population was substantiated by the data.

## CHAPTER V

### SUMMARY

This study was undertaken to determine whether the ratio of one public health nurse to 2,000 population, as recommended by the National Organization for Public Health Nursing, was realistic for a selected community of southern New England. In 1946, representatives from national voluntary and official agencies, concerned with public health nursing, jointly sponsored a recommendation that one public health nurse should be provided for approximately every 2,000 of the population. Through the years public health authorities have accepted this recommendation and felt that the ratio of one nurse to 2,000 population was essential to provide a complete program of public health nursing services for a community. Only six communities, up to the year 1947, had achieved this goal. The population of the United States has increased, but the increase in public health nurses has not kept pace with the population.

The District Nursing Association studied was located in a community immediately adjacent to a large metropolitan city in southern New England. The Association was financed by an appropriation from the United Fund, fees from patients, and tax funds. The District Nursing Association provided public

health nursing in the community equivalent to the services of one and one-half staff nurses; the Department of Education employed one school nurse. The District Nursing Association had purchased nursing service from the District Nursing Association of the adjacent metropolitan city since August 1943.

In order to determine what data were available, unstructured interviews were held with the public health nurse director of the District Nursing Association from which service was purchased; the chief of the Division of Vital Statistics of the State; and the secretary of the Health Division of the Council of Community Services. Additional information was obtained from the superintendent of schools regarding the school census and the school registration data.

The population data showed that the population of the community had increased 24.9 per cent between the years 1950 and 1956. The ratio of district nurse to population in 1950 was one to 8,113 persons, and in 1956 was one to 10,086. To obtain the ratio of one nurse to 2,000 of the population approximately 6.1 nurses should have been employed in 1950 and 7.5 nurses in 1956. According to the above, the number of public health nurses per population was not adequate in 1950, and became less adequate in 1956. The total cases and visits of the Association decreased in 1956, but there were more staff days worked.



There were no maternal deaths for either year. The number of stillbirths decreased by three in 1956. Eight infant deaths occurred under 28 days in 1950 and ten infant deaths occurred under 28 days in 1956. The number of live births increased in 1956. There were fewer maternity and infant cases in 1956. Less maternity visits were made in 1956 than in 1950. Very few of the maternity patients were visited once before delivery and once after delivery. Infants in 1950 and 1956 were visited less than the suggested minimum of four visits in the first year. Of the total number of infants born in the community, only 28 per cent were visited by the district nurse in 1950 and 20.5 per cent in 1956. Attendance at the child health conference increased in 1956. The number of pre-school children visited was very small for both years.

In 1956, there was a slight increase in the number of deaths, and an increase in the chronic diseases as the cause of death. It can be assumed that the increase in chronic diseases was one of the reasons there was an increase in the percentage distribution of home visits to patients with non-communicable diseases.

Few visits were made to patients with communicable diseases other than tuberculosis. There were fewer tuberculosis cases in 1956 than in 1950 and less visits were made, but the number of cases reported to the State Department of Health increased.

### Conclusions

1. If the nurses were employed on the ratio of one nurse to 2,000 population, approximately 6.1 nurses should have been employed in 1950 and 7.5 nurses in 1956.

2. There appears to be a need for a public relations program to acquaint the community with the services of the District Nursing Association.

3. If more staff nurses were employed by the Association, a more adequate public health nursing program could be offered to the community.

4. If the Association is receiving tax funds to provide infant and pre-school nursing services to the community, this service should be expanded to meet the needs.

5. More staff nurses would be needed to provide adequate nursing service to patients and families with tuberculosis.

6. The number of public health nurses needed in a community cannot be determined solely by the ratio of nurse to population but depends on many other factors, such as the health status of the community, other existing health programs, the social, the cultural, and the economic conditions.

7. If the Association were able to employ the number of nurses on the ratio of one nurse per 2,000 population, it is questionable whether such an extension of public health nursing services would be of value to the community without an

expanded and continuous program of community health education.

### Recommendations

On the basis of the findings of this study the writer recommends the following:

1. That further study be made of the health needs of the community and of the type and extent of the health programs.
2. That a similar study be made after the 1960 United States Census data are available regarding age groups, nationality, per capita income, housing etc.
3. That a study be made to determine the knowledge the community has of the services offered by the District Nursing Association.
4. That a study be made of the neonatal deaths in this community.
5. That a study be made to determine the factors which influence attendance at child health conferences.
6. That the Board of Directors of the District Nursing Association consider the need of employing more nurses in order to expand the public health nursing services to meet the needs of the increasing population in the community.
7. That the Association consider employing practical nurses to assist in the care of patients with chronic illness.
8. That there be a method developed to study the public health nursing needs of a community.

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