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The nurse's role in exercise procedures

THE NURSE'S ROLE IN EXERCISE PROCEDURES

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I wish to express my appreciation to Mary M. MacDonald for permitting me to undertake a replication of her study and to use her definitions and questionnaires which she had so capably developed.

Betty R. Erlandson

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CHAPTER I

INTRODUCTION

Allen has recommended extending the rehabilitation services from large centers located in urban areas to "satellite" facilities in suburban and rural areas.[1] Whether or not such a proposition will, in fact, materialize, it is one answer to the growing awareness of this great health need which exists now and will undoubtedly increase with the years. Advancements in medicine, surgery, anesthesia, and pediatrics and the new knowledge of the special needs of the geriatric patient--all combine to insure survival of man and individuals for a longer life expectancy.

More radical medical, surgical, orthopedic, and neurological problems are being treated in the community hospital. The general practitioner of today has easy access to consultation from a specialist. Patients with particular medical needs are often cared for at the community hospital facility with the specialist coming to the patient rather than the patient being sent to a large urban medical center far from home. More and

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[1]Scott Allen, "Community Attitudes and Action--A Dimension of Rehabilitation," Paper read at the conference "Newer Dimensions for Nursing in Rehabilitation," sponsored by the Office of Vocational Rehabilitation and Boston University, Boston, Massachusetts, November, 1961.

more hospitals and health centers are expanding or adding to their facilities to meet this social trend.

As the public becomes aware of hopefulness instead of hopelessness in the treatment of chronic disease; as treatment centers become more readily available; as more is known about prevention as well as correction of deformity and maintenance of function; as more people become financially able to have these services through health insurances and social services; one of the great obstacles to the full utilization of all these forces will be a shortage of educated people to fulfill these needs.

Since nurses are in a strategic position to see the patient (of any age) at the bedside from the onset of his hospitalization or in the home during illnesses, in clinics, industrial health offices, and doctors' offices, it would seem to follow that nurses must assume responsibility for maintenance of function and prevention of deformity. In order to accomplish these two basic functions they must be able to perform and teach others certain exercise procedures. If nurses are to assist persons who have been ill to return to normal function they must be able to teach activities of daily living. For these simple activities following certain types of surgery, illness, or disability, muscles may need strengthening or retraining. The only way to strengthen muscles is to use them and this means exercise. Nurses can delegate these functions only when there are physical therapists to whom they can

delegate. But, since it seems highly unlikely that in the foreseeable future there will be enough physical therapists to teach, supervise, and/or perform all the exercise procedures necessary for maintenance of function, prevention and correction of deformity for all the people with medical or surgical conditions which need this kind of service, it would seem that the nurse must continue to assume some responsibility for these procedures (under medical direction).

What then is the role that the registered nurse is expected to assume in the therapeutic exercise program?

In 1961, MacDonald wrote her field study at Boston University School of Nursing on this subject.[1] This study is a replication of her study in an attempt to further describe the opinion of recognized authorities concerning the responsibilities of registered nurses for certain exercise procedures.

Statement of the Problem

This study is a replication of a study done by Mary M. MacDonald in which she requested the opinions of various authorities as to the kinds of exercise procedures for which registered nurses may assume responsibility and the degree of responsibility which they may assume. In this study the opinions of rehabilitation nurses, nurse physical therapists,

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[1]Mary M. MacDonald, "Expectations of Recognized Authorities Regarding Exercise Procedures for Which Registered Nurses May Assume Responsibility" (unpublished Master's thesis, School of Nursing, Boston University, August, 1961).

non-nurse physical therapists, physiatrists, orthopedists, and neurologists regarding the degree of responsibility which registered nurses may assume for various exercises were obtained.

Justification of the Problem

MacDonald has suggested that nurses do not assume responsibility for exercises which are part of their education because they are not clear as to just what these responsibilities are.[1] In a review of the nursing texts general statements are made suggesting that nurses have a role in exercise programs. Brown states:

> The three essential steps in physical rehabilitation of the patient who has had a cerebral vascular accident are (1) prevention of deformities, (2) retraining, and (3) ambulation. In order to prevent contractures, the affected arm and leg should be moved as much and as soon as possible. . . . It is the responsibility of the nurse or a member of the family to see that each joint is moved through the normal range of motion at least twice a day. This may be done, in part, while the nurse is giving the bath.[2]

A similar broad statement is made by Windemuth when she says that the nurse should incorporate the prescribed exercises into activities of daily living for patients with arthritis.[3]

If the nurse does not assume responsibility because

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[1] Ibid., p. 3.

[2] Amy Frances Brown, Medical and Surgical Nursing II (New York: W. B. Saunders Co., 1959), p. 463.

[3] Audrey Windemuth, The Nurse and the Outpatient Department (New York: The Macmillan Co., 1957), p. 406.

she is confused as to what her responsibility is and, if it can be established that the need is sufficient to warrant the inclusion of the nurse in an exercise program, then it would seem imperative that this confusion be eliminated and the role of the nurse be clarified. MacDonald, who attempted to establish the nurse's role, has recommended that a similar study be done using orthopedists and neurologists as participants in order to enlarge the findings of her study.[1]

Scope and Limitations

The sample of recognized authorities was drawn from the New England States. It consisted of 6 panels representing a total of 29 respondents. Each panel was made up of physiatrists, orthopedists, neurologists, physical therapists, registered nurse physical therapists, and rehabilitation nurses. Because of illness, lack of specialists in some areas, or inability to obtain participation, not all panels had equal representation.

No attempt was made to survey the field of chronic or disabling diseases or conditions, or facilities and personnel available for their care. References to common conditions are made merely to emphasize or clarify a point or to exemplify a need.

Preview of Methodology

The methodology established by MacDonald was used as

[1] MacDonald, op. cit., p. 67.

exactly as possible. The rehabilitation nurses were recommended by the chairman of the Medical Surgical department of Boston University School of Nursing as were the orthopedists, neurologists and physiatrists. Two non-nurse physical therapists and one physical therapist with nursing background were recommended by the President of the American Physical Therapy Association. The remaining physical therapists, including those with nursing background, were personally recommended by the President of the local Physical Therapy Association in each state.

The questionnaire and definitions used are exactly those used by MacDonald.[1]

Sequence of Presentation

Chapter II is a review of the literature pertaining to three areas: the opinions of medical and nursing authorities concerning the need for exercise in certain conditions, the extent of chronic and disabling disease, and the facilities and personnel available to meet the need in the New England area.

Chapter III reports on how respondents were selected and the questionnaire used.

Chapter IV presents a report of the replies to the questionnaire, a comparison between the results of this study and that of MacDonald, and the implications of these results.

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[1] Ibid., pp. 73-84.

Chapter V includes the summary, conclusions and recommendations.

CHAPTER II

THEORETICAL FRAMEWORK OF THE STUDY

Review of the Literature

Active exercise starts with the fetus in utero and continues throughout life. No person needs to instruct the infant to exercise, the young child to run, climb, push, pull, take a deep breath or any other "exercise" to increase muscle tone. The teen-age boy, anxious to develop his strength, knows the value of exercise without any kind of professional prescription. But as man becomes an adult these activities, which were formerly normal aspects of living, now become therapies that need to be undertaken for a specific purpose. Dr. Paul Dudley White prescribes bicycle riding and walking as exercises appropriate to middle age. Television features programs of exercises to make you feel and look younger. Articles in popular magazines and newspapers direct the attention of the public to the value of appropriate exercise.

When illness, either acute or chronic, interferes with man's normal living and mode of exercise, specific exercises, commensurate with the physical abilities of the patient, must be substituted in order to prevent the formation of contractures, maintain normal muscle tone, circulation, lung expansion and to strengthen muscles needed for adjustment that may be necessary in order that he may continue to live an active

life.

MacDonald's study has identified and defined therapeutic exercises as this term is to be used in this study. Consideration is given to all phases of exercise procedures, including prevention, maintenance, correction, and strengthening.[1] The next logical step would seem to be to identify the extent of the need for these various exercises, some of the conditions of illness that predispose to disability or are in themselves disabling, the measures that are suggested by medical and nursing authorities to alleviate these conditions, and to identify what facilities and personnel are available to carry out these measures. For the purpose of this study the term "chronic disease" shall apply to any disease lasting three months or longer. The term "acute disease" shall apply to any condition of less than three months duration and not to an exacerbation of a chronic illness.

Abdullah has identified twenty-one nursing problems to be used as a basis for nursing education and nursing care. Her fourth nursing problem is: "to maintain good body mechanics and prevent and correct deformities."[2] Skinner has said the same thing in a different way:

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[1]Mary M. MacDonald, "Expectations of Recognized Authorities Regarding Exercise Procedures for Which Registered Nurses May Assume Responsibility" (unpublished Master's thesis, School of Nursing, Boston University, August, 1961), pp. 6-20.

[2]Faye G. Abdullah et al., Patient-Centered Approach to Nursing (New York: The Macmillan Co., 1960), p. i.

> The nursing team should be constantly alert to the preventative and restorative aspects of patient care as well as the curative aspects of care. . . . Since all illness is a potential crippler, nursing's goal in the general hospital is to carry the patient safely through his acute illness with a minimum of complication. . . . In each patient, the nurse must recognize a challenge and perform her role in helping the patient prevent deformity from developing.[1]

Deaver, professor of clinical physical medicine and rehabilitation at New York College of Medicine says that "the greatest need at the present time is for physicians and nurses to realize that the rehabilitation process starts when the patient is admitted to the hospital."[2] He identifies the role of the nurse in rehabilitation as teaching crutch-gait, preventing deformities, and teaching self-help activities.[3] Taylor, in writing of nursing responsibilities in this same article, says that:

> The nurse's scientific background keeps her aware of the axiom, 'What you don't use you will lose'--especially as it relates to physiologic function. Keeping this principle in mind the nurse can plan a program of activity and prophylactic exercises within the patient's physical limitations.[4]

It is implicit in all illnesses that activity is

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[1]Geraldine Skinner, "The Nurse--Key Figure in Preventative and Restorative Care," Journal of American Hospital Association, XXXVI (January, 1961), pp. 52-56.

[2]George G. Deaver, "Rehabilitation," American Journal of Nursing, LIX (September, 1959), p. 1278.

[3]Ibid., p. 1279.

[4]Winnefred E. Taylor, "Rehabilitation," American Journal of Nursing, LIX (September, 1959), pp. 1280-1281.

limited to some degree. Yet there are certain physical conditions where limitation of some parts is complete. This must apply to most fractures, any condition which causes temporary or permanent paralysis, immobility of parts in casts or traction, unconsciousness, or severe pain with motion.

Casagrande and Frost in their introduction to clinical orthopedics include these directions to the physician:

> Immobilization causes muscular atrophy which is initially rapid, but markedly slowed after six weeks. If the immobilization is sufficiently prolonged, a large number of the cells may atrophy completely with fibrous tissue replacement.[1]

They recommend many exercises for specific conditions such as deep breathing exercises and coughing to prevent atelectasis or pneumonitis following fracture of the ribs,[2] pendulum exercises after fracture of the head of the humerus[3] and several others. Ray Murray states that:

> The maintenance during the treatment of the bone lesion of as much functional activity of the part as is possible within limits imposed by the individual involved, the pathologic situation, and the treatment methods available is an important aspect of fracture treatment.[4]

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[1]Peter A. Casagrande and Harold M. Frost, Jr., Fundamentals of Clinical Orthopedics (New York: Grune & Stratton, 1953), p. 19.

[2]Ibid., p. 337.

[3]Ibid., p. 342.

[4]Frederick W. Bancroft (ed.), Clay Ray Murray (assoc. ed.) Surgical Treatment of the Motor Skeletal System, Vol. II (Philadelphia, London, Montreal: J. B. Lippincott Company, 1945), p. 622.

During the long period of immobility, often recommended in the treatment of Legg-Calve-Perthes' disease, Ralston cautions that muscle tone must be maintained in all the hip and extremity muscles to prevent atrophy and insure faster recovery.[1] This is accomplished by a definite program of exercises.

In this same issue of The American Journal of Nursing is an article entitled "Crutch Walking" in which the author identifies groups of muscles which will need to be strengthened in preparation for crutch walking, as well as specific exercises for each muscle group. Knocke goes on to say that the teaching and care of the person who will be a temporary crutch walker most often falls within the province of the nurse.[2] West, however, says specifically that:

> Crutch walking is usually taught by a specialist (the physiotherapist). If this service is not available, the nurse must assume this responsibility. If the patient is taught. . . by the physiotherapist, the nurse's responsibility is to supervise the patient on the nursing unit.[3]

Knocke calls attention to the differing needs of the young athletic crutch walker, the geriatric patient, and the

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[1]Edgar L. Ralston, "Legg-Calve-Perthes' Disease," American Journal of Nursing, LXI (October, 1961), p. 91.

[2]Lazelle Knocke, "Crutch Walking," American Journal of Nursing, LXI (October, 1961), pp. 70-71.

[3]John West et al., Nursing Care of the Surgical Patient (New York: The Macmillan Co., 1957), pp. 430-431.

patient who has been confined to bed for some time.[1] Even for as mild an injury as a sprained knee, Mendelson recommends active quadriceps exercises during immobilization.[2]

Bancroft and Murray sum up the need for exercise as follows:

> The problem of functional activity should be considered primarily from the standpoint of muscle, tendon, nerve, and vascular function. Except under unusual conditions, joints become stiffened by ligaments which are rendered thickened and rigid by the edema and sclerosis occasioned by minute circulatory stagnation, and tendons become fixed by virtue of the same effects on mesotenon and parotenon. The essential factor involved in the prevention of such circulatory stagnation is coordinated nerve-muscle physiology. . . . This should emphasize the point that, <u>even with joints completely immobilized</u>, every effective functional activity can be secured by the systematic use of voluntary exercise of the muscles which ordinarily activate the immobilized joint.[3]

For the patient who has had a fracture of a bone or corrective orthopedic surgery, the primary physical insult is to the bone, but for the person who has had an amputation of a major body part, the primary physical insult is to the muscle. In addition to the muscle loss, there is a natural tendency to avoid pain and maintain the affected body part in a position of comfort. The same principle of the effects of immobilization on joints applies whether the adjacent part is in a cast,

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[1]Knocke, <u>loc. cit.</u>

[2]Janice A. Mendelson, "Sprains and Strains," <u>American Journal of Nursing</u>, LXI (June, 1961), p. 48.

[3]Bancroft, <u>loc. cit.</u>

voluntarily held motionless, or kept in one position by dressing, traction, sand bags, fear of pain, or desire for comfort.

The muscle imbalance caused by the removal of pectoral muscles in radical mastectomy, or the excision of the insertion of the extensor muscles in an above-the-knee amputation, result in a need to develop the strength in other muscles to take over the functions of the impaired muscle group.

Two types of exercises seem to be the most commonly referred to in literature associated with radical mastectomy. The first is deep breathing. Some authorities such as West describe both purposes and exercises in some detail.[1] Others, such as Ferguson and Sholtis, mention that the patient should be encouraged to deep-breathe.[2]

The second type of exercises mentioned in the literature on radical mastectomy, almost without exception, is that used to strengthen muscles in the shoulder girdle, to prevent contractures, and to maintain a free range of motion in the shoulder itself. Suggested directions for these exercises vary considerably. Ferguson, for instance, says that "after twenty-four hours, the arm on the affected side should have passive exercise."[3] She suggests only one specific active

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[1]West, op. cit., pp. 523-524.

[2]L. Kraeer Ferguson and Lillian A. Sholtis, Eliason's Surgical Nursing (11th ed.; Philadelphia and Montreal: J. B. Lippincott, 1959), p. 525.

[3]Ferguson, loc. cit.

exercise (climbing the wall with the fingers) but cautions that failure to do exercises may "prolong the disuse of the arm and promote the development of a contracture."[1] Pelter, on the other hand, is less precise as to when exercises should start. He says that both "active and passive movements are started as soon as they are not too uncomfortable for the patient." But he suggests another benefit of exercise when he says "early exercise lessens residual edema."[2]

Brown suggests a routine of graduated exercises. After seventy-two hours the arm is freed of the restricting dressing and passive exercises are begun with no abduction of the arm. This is followed after six or seven days by limited motion of the arm. In twelve to fourteen days abduction may be encouraged as well as the use of the arm in activities of daily living.[3]

Higginbotham describes regular exercise classes conducted by nurses at the Memorial Center for Cancer and Allied Diseases in New York City. The day after surgery the nurses on the ward begin preparation of the patients for exercises by suggesting mild activities of daily living. The doctor usually gives his permission for exercise classes two days

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[1]Ibid., p. 526.

[2]Robert K. Pelter, Frances West, and Lydia M. Zelzsche, Surgical Nursing (Philadelphia: F. A. Davis Co., 1952), p.581.

[3]Amy Frances Brown, Medical and Surgical Nursing II (Philadelphia and London: W. B. Saunders Co., 1959), p. 691.

after surgery or some time later if there has been skin grafting or a resection of the chest wall. Classes include correct posture, "pendulum swinging," "rope turning," "wall climbing," "rope sliding," and "broom raising." Each exercise is performed twice and increased daily until each exercise is done ten times, at three different periods of the day.[1]

Flexion contracture of the hip, abduction contracture and external rotation are common if proper exercise is not followed after an above-the-knee amputation. West says that "the prevention of a flexion deformity in the adjacent joint is essential if the prosthesis is to be useful. The thigh amputee should exercise to overcome the development of hip contracture and to strengthen his muscles."[2] Even if the patient cannot wear a prosthesis, a hip contracture will seriously interfere with positioning in bed, dressing, and maintaining balance in crutch walking.

Again, directions for exercise of the affected leg vary. Ferguson says that the patient should be encouraged to turn from side to side and be on his abdomen to prevent contracture of the hip.[3] Brown recommends the prone lying position "in order to force the leg into extension."[4] Pelter is

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[1]Sarah Higginbotham, "Arm Exercises After Mastectomy," American Journal of Nursing, LVII (December, 1957), pp. 1573-1574.

[2]West, op. cit., p. 430.

[3]Ferguson, op. cit., p. 665.

[4]Brown, op. cit., p. 415.

more explicit. He says that:

> It is imperative, however, that normal range of motion be maintained in the knee, if there is one, and in the hip joint on the involved side if the patient is going to develop a normal gait later on. . . . Several times daily he should turn over in a face down position and actively hyperextend the stump. . .[1]

Directions written for the doctor by Gibbel are very explicit:

> Unless special attention is directed to the hip on the amputated side, moderate to severe flexion contractures can develop. This can be avoided if passive hyperextension of the hip is started on the second postoperative day and active hyperextension from the fourth postoperative day on. The sitting position should be avoided until active hyperextension is possible. The patient should be instructed to be on his abdomen with leg extended for twenty to thirty minutes two times a day.[2]

Cicenia outlines the rehabilitation of the amputee as falling into "four categories of concentration: postoperative care, fitting of the prosthesis, functional training and vocational retraining."[3] Of these four categories the nurse is likely to be involved with the care of the patient only in the first. However, he says of this category that "postoperative care is intended to assuage any psychic trauma, to prevent

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[1]Felter, op. cit., p. 49.

[2]Melvin J. Gibbel, "Amputations of the Lower Extremity in Vascular Disorders," The Surgical Clinics of North America, Vol. XL, No. 1 (Philadelphia and London: W. B. Saunders Co., February, 1960), pp. 173-174.

[3]Erbert P. Cicenia et al., "Functional Training of the Above-Knee Amputee," American Journal of Physical Medicine, Vol. XXXVIII, No. 1(February, 1959), p. 9.

surgical complications, and to prepare the stump for prosthetic fit."[1] Since the stump cannot be fitted for a prosthesis in the presence of contractures, these must either be prevented before they develop or corrected before the limb can be fitted.

Allgire and Denney believe that prevention of deformities should be routine nursing procedures.[2] Warren says that the objectives for the care of the arteriosclerotic amputee are: "(a) care and protection of remaining foot, (b) strengthening of the muscles necessary for walking, (c) avoidance of flexion contractures of the hip on the amputated side, and (d) early provision for a temporary prosthesis."[3]

Patients with a lower limb amputation are allowed up in a wheel chair and/or on crutches for some time before discharge from a hospital. Therefore, exercises to strengthen muscles needed for transfer activities are necessary as well as those referred to previously as important for crutch walking.[4] Since these patients may also be discharged from a hospital and re-admitted at a later time for fitting of a

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[1]Cicenia, loc. cit.

[2]Mildred J. Allgire and Ruth R. Denney, Nurses Can Give and Teach Rehabilitation (New York: Springer Publishing Co., Inc., 1960), p. 12.

[3]Richard Warren, "Early Rehabilitation of the Arteriosclerotic Amputee," Surgery, XLI (February, 1957), p. 190.

[4]Knocke, loc. cit.

prosthesis and training, it means that they must either be prepared for ambulation and transfer while hospitalized or be limited in their activities while waiting for re-admission.

The next logical group of patients to be considered are those who have not had limbs amputated but whose limbs are paralyzed by pathology in certain organs such as certain brain tumors and brain lesions, some kinds of trauma involving interruption of nerve pathways and some diseases of the spinal cord to mention only a few. But perhaps the most common is the paralysis resulting from a cerebral vascular accident. The same effects of disuse referred to earlier[1, 2, 3] apply to a limb, or any part of the body, that is immobilized because the patient is unable to move the part voluntarily.

A tremendous amount of literature has been written for both the lay and professional person about the care of the patient who has had a cerebral vascular accident. The American Heart Association has published or sponsored the publication of many pamphlets for the education of the public. Most of the publications mention the need for exercise if there is paralysis present. One such small pamphlet says that the nurse will position the patient properly "in order to prevent deformities from developing. . . ," and, "A visiting nurse or

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[1]Taylor, op. cit., p. 1280.

[2]Casagrande and Frost, op. cit., p. 19.

[3]Bancroft and Murray, loc. cit.

public health nurse is often helpful in assisting the family and the patient in carrying out the physician's instructions."[1]

For the nurse, the article by Covalt is most explicit. She says that:

> Techniques for restoring physical activity and independence to the hemiplegic patient do not require specially trained persons. But they must be instituted during the acute phase following a cerebral vascular accident. Delays are responsible for the need for specialized and costly services. The goals of this program are the prevention of hemiplegic deformities, the prevention of disuse atrophy and training in ordinary activities of daily living. The basic rule for rehabilitation is: Never do passively for the patient those things that he can do, or learn to do, actively for himself.[2]

She continues by identifying those muscles most frequently involved,[3] the rate of deformity,[4] (the shoulder of the involved arm will stiffen in at least forty-eight hours) and the types of deformities which result.[5] She recommends passive range of motion immediately for all patients on the basis that if his position can be changed in bed range of motion exercises will do no more harm and will prevent joint stiffness.[6]

Covalt is explicit as to the value of a particular kind

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[1] Cerebral Vascular Disease and Strokes, prepared by the Heart Information Center, National Heart Institute (Washington: U. S. Government Printing Office, 1958), p. 13.

[2] Nila Kirkpatrick Covalt, "Preventive Techniques of Rehabilitation for Hemiplegic Patients," Reprint from General Practitioner, XVII (March, 1958), p. 131.

[3] Ibid., pp. 132-133.

[4] Ibid., p. 133.

[5] Ibid., p. 132.

[6] Ibid., p. 134.

of exercise when she says:

> The only prevention of disuse atrophy is by active motion. In a hemiplegic, there are only a few specific exercises that need to be done. Many a hemiplegic is kept in bed and so completely waited upon that in a few weeks the muscles of the unaffected extremity are as if he had completely flaccid paralysis of these parts.[1]

Morrissey says that the body of the patient with hemiplegia should always be supported in such a way as to counteract tension on the weaker muscle group.[2] She also says that "the nurse should incorporate active and passive exercises into the basic nursing care of the hemiplegic patient."[3] She cautions against neglecting the unaffected side when she says:

> The nurse always should remember, too, that the unaffected side of the patient's body needs as much attention as the paralyzed side because without exercise the muscles of the nonaffected side may atrophy from disuse. When this happens, the patient is apt to resemble a quadriplegic patient more than a hemiplegic.[4]

Terry recommends quadriceps setting exercises for the bed patient, a strong cord or piece of webbing at the foot of the bed to assist the patient to raise himself, pulley therapy to prevent a frozen shoulder, and suggestions for teaching the patient balance and ambulation.[5]

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[1] Ibid., p. 132.

[2] Alice B. Morrissey, Rehabilitation Nursing (New York: G. P. Putnam's Sons, 1951), p. 244.

[3] Ibid., p. 245.

[4] Ibid., p. 246.

[5] Florence Terry, "Hemiplegia, Paraplegia and Quadriplegia," Principles and Technics of Rehabilitation Nursing, ed. Deborah Jensen, (St. Louis: The C.V. Mosby Co., 1957), p. 150.

Shafer et al., authors of a frequently used nursing text, identify the nurse's role in the exercise program for a hemiplegic patient this way:

> Range of joint motion should be preserved, and passive exercises are often started early. The nurse needs no order to put the patient's limbs through complete range of joint motion passively once or twice each day. . . . No difficulty is encountered with these procedures until tightening of the muscles begins to appear. Then other physical measures are needed, and the patient's treatment should be under the direction of a physical therapist.[1]

However, there then follows a description of exercise against resistance for the purpose of strengthening the quadriceps in preparation for ambulation.[2]

In an article by Turner, it is stressed that the public health nurse is instructed by the physical therapist to perform exercises with these patients. Again range of joint motion, support and body alignment and frequent changes of position are recommended. This article points out that the physical therapist serves as a "consultant to nurses in such areas of treatment as muscle re-education, evaluation of the patient's potentials, and preferred methods of transfer activities, demonstrates specific techniques and gives guidance and supervision."[3]

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[1]Kathleen Newton Shafer et al., Medical-Surgical Nursing (St. Louis: The C. V. Mosby Company, 1958), p. 860.

[2]Ibid., p. 861.

[3]Gwendolyn E. Turner, "The Cerebral Vascular Accident Patient," Nursing Outlook, VIII (June, 1960), p. 328.

Although a patient with arthritis may be seen more often by public health nurses, visiting nurses, office and industrial nurses than by the hospital nurses, the need for exercise for these patients is no less acute. The Arthritis and Rheumatism Foundation publishes several pamphlets intended to inform and guide the person with arthritis. One such pamphlet, Home Care in Arthritis, emphasizes the need for specific therapeutic exercises, and describes the exercises and their purposes.[1] This article recommends that exercises be done by a physical therapist but goes on to state that "since it is difficult today to find physical therapists in many communities, members of a patient's family, or perhaps a visiting nurse, can be instructed in the art of giving assistive, passive or resistive exercises."[2]

Blakeslee, science writer for the Associated Press, has written a pamphlet on arthritis. Although this was written with the cooperation of the Arthritis and Rheumatism Foundation, the National Institute of Arthritis and Metabolic Diseases of the U.S. Public Health Service, and the New York Academy of Medicine, this is still information written by a lay person for lay persons. Again, the importance of exercise is illustrated; but exercise in general and as ordered by the

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[1]Arthritis and Rheumatism Foundation, Medical and Scientific Committee. Home Care in Arthritis. New York: Arthritis and Rheumatism Foundation, 1958, pp. 13-19.

[2]Ibid., p. 2.

doctor rather than as any specific type.[1]

One other booklet deserves mention: Strike Back at Arthritis. This booklet was written to serve as a guide for physicians who might be prescribing treatments for arthritic patients, and to instruct them particularly in exercise regime. The introduction contains the following explanation of the purpose and value of exercise:

> In the absence of specific measures to prevent or cure most of the arthritic diseases, modern management of the patient with arthritis is directed at controlling the effects of these diseases. There has been an increasing awareness in recent years of the dangers of immobilization in producing disability. This suggests that crippling occurs when there is needless limitation of the movement of affected joints. Clinical experience has demonstrated that much of this crippling can be prevented. Effective preventive measures include exercises which preserve or improve the range of motion of the involved joints.[2]

Shafer et al., devote an entire chapter in their text to the nursing care of the patient with arthritis. In regard to exercises for these patients they say that exercises are usually prepared for them by the physiatrist and taught to them by the physical therapist. However, they believe the nurse should know the purpose of the exercises, be able to assist in the teaching of both patient and family, and super-

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[1]Alton L. Blakeslee, Arthritis--Its Treatment and Problems. 2nd ed. revised. Public Affairs Pamphlet No. 166. New York: Public Affairs pamphlets, 1955.

[2]Strike Back at Arthritis. Public Health Service Publication No. 747. Public Health Service, in collaboration with the Arthritis and Rheumatism Foundation. Washington, D.C.: U.S. Government Printing Office, 1960.

vise the performance of the exercises.[1]

Another opinion as to the role of the nurse in the exercise program for the patient with arthritis is found in an article written by Nicholson, who is a public health nurse. She believes that the physical therapist gets approval from the doctor and then demonstrates the exercises to the public health nurse and family. It then becomes the responsibility of the public health nurse to teach and supervise the exercises with consultation and regular re-evaluation by the physical therapist.[2]

Not all diseases needing exercises have been discussed, nor are all diseases that have been discussed chronic diseases. Chronic disease is defined as a disease lasting three months or longer. This definition would seem to imply that some activity and exercise program would be beneficial in any chronic disease condition. In order to obtain some indication of the extent of the need for exercises, literature was reviewed for statistical incidence of some of the common chronic diseases.

National figures for persons receiving care at home is about 6.6 persons per 1000 population. The prevalance rate rises consistently from about 2 per 1000 population at the

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[1]Shafer et al., op. cit., pp. 915-930.

[2]Enrica Nicholson, "Role of the Visiting Nurse for the Homebound Arthritic," Arthritis, ed. Edward W. Lowman, (Boston: Little, Brown and Co., 1959), p. 225.

lower ages to 87.7 per 1000 population at age 75 years and over. From July, 1958 to June, 1959 there were a total of 1,128,000 persons in the civilian, non-institutional population who required constant care or part time help in their homes.[1] By using census figures the number of persons requiring constant care or part time help in their home for each New England State can be estimated as follows:[2]

Maine	6,400
New Hampshire	2,000
Vermont	2,500
Massachusetts	34,000
Rhode Island	6,000
Connecticut	17,000

The per cent distribution of persons according to age and presence of chronic conditions and limitations of activity in the New England States is illustrated in the following table:[3]

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[1]Health Statistics. Series B, No. 28. United States Department of Health, Education, and Welfare. Washington, D.C.: U.S. Government Printing Office (October, 1961), p. 2.

[2]The World Almanac 1962, ed. Harry Hansen, New York World Telegram and Sun, 125 Barclay St., New York 15, N. Y., p. 255.

[3]Health Statistics, op. cit., Series C, No. 6, (March, 1961), p. 14.

Table 1.--Per Cent Distribution by Age of Persons with Chronic Conditions and Limitations of Activity

Ages	Total Persons	% Distribution	
		Persons with +1 Chronic Conditions	Persons with Any Degree of Activity Limitation
0 - 24	100	21.1	2.3
25 - 44	100	45.4	6.9
45 - 64	100	53.7	13.7
65+	100	75.5	39.7

It is apparent from this table that numbers of persons with chronic illness and limitations of activity rise sharply with age.

Where do these elderly people live? Are they within easy access to large, well staffed metropolitan hospitals? Table 2 shows that in the North East more than 45% of persons 65 years and older who have some chronic limitation of activity actually live in the rural farm areas.[1]

Table 2.--Geographical Region and Residence of Persons 65 Years and Older with Chronic Limitations of Activity by Per Cent: U.S., July, 1957 - June, 1959

Region	Percents			
	Residence			
	All Areas	Urban	Rural Non-farm	Rural Farm
All Regions	42.3	39.1	46.3	51.2
North East	38.3	37.3	40.4	45.5

[1] Ibid., Series C, No. 5, (March, 1961), p. 4.

What per cent of our total population will fall into this 65+ years age group? Table 3 shows the distribution of persons by age and residence for persons in the United States as a whole, and for the North East section.[1]

Table 3.--Percentage of Persons According to Age by Residence and Region: U.S., July, 1957 - June, 1959

Residence and Age	% Distribution	
	All Regions	North East
All Areas	100.0	100.0
0 - 24	44.1	39.8
25 - 44	26.8	27.8
45 - 64	20.5	23.1
65+	8.6	9.3
Urban		
0 - 24	41.5	38.4
25 - 44	27.1	27.3
45 - 64	22.2	24.7
65+	9.2	9.6
Rural Non-farm		
0 - 24	48.1	43.7
25 - 44	28.4	30.5
45 - 64	16.4	18.0
65+	7.2	7.8
Rural Farm		
0 - 24	48.0	45.0
25 - 44	21.7	22.7
45 - 64	21.0	20.6
65+	9.2	11.7

[1] Ibid., Series C, No. 5, (March, 1961), p. 3.

This table would indicate that the highest per cent of persons 65 years of age and over occurs in the rural farm area far from large cities where health facilities are most likely to be situated. This implies that it may be necessary for these elderly people who report chronic limitations of activity to travel some distance if specialized treatment is necessary. This expense may be a heavy burden to families whose income is low.

The Baltimore Study, although conducted in a large city, would seem to indicate that the prevalence of chronic diseases is higher in the lower income levels as illustrated in the following table:[1]

Table 4.--Prevalence of All Chronic Diseases by Annual Family Income per 1000 Population

Income	Number of Chronic Diseases per 1000 Population
All income	1,892
Under $2,000	475
$2,000 - 3,999	533
$4,000 - 5,999	412
$6,000 and over	214

[1] Chronic Illness in a Large City: The Baltimore Study. Vol. IV: Chronic Illness in the United States. Cambridge: Harvard University Press, 1956, p. 53.

In another report of the incidence of long-term disability it was found that the average age for persons involved was much higher than that for other groups.[1] Another interesting point brought out in this same report is the higher per cent of disability in females than males in ages 25-44 and 65 and over shown in the following table:

Table 5.--Per cent of Disability Reported by Family Interviews According to Age and Sex: Chronic Illness in a Rural Area; The Hunterdon Study, 1959

Long Term	Male	Female
All ages	3%	3%
0 - 14	1%	1%
15 - 24	1%	1%
25 - 44	1%	2%
45 - 64	4%	4%
65+	3%	12%

Figures reviewing the incidence of certain chronic diseases will follow. An interesting point is made in the following table which illustrates the number of cases of paralysis

[1]Chronic Illness in a Rural Area: The Hunterdon Study. Reported by Ray E. Trussell and Jack Elinson. Vol. III: Chronic Illness in the United States. Cambridge: Harvard University Press, 1959, p. 6.

for all groups per 1000 population within the civilian, non-institutional population of the United States.[1]

Table 6.--Number of Cases of Paralysis per 1000 Population in U.S. by Age, July, 1957 - June, 1958

Age	Under 25	25 - 44	45 - 64	65 - 74	75+
No. Cases Per 1000	136	157	305	153	168

The figures reported for the younger age group probably imply that paralysis was the result of poliomyelitis, cerebral palsy, muscular dystrophy, birth defects or trauma. But for the other age groups one could expect that paralysis reported was, in many instances, the result of common chronic disease. It has been estimated, for example, that one of these chronic diseases, Parkinsonism, affects between 1,000,000 and 1,150,000 in the population and that cerebral vascular accidents affect about 1,800,000; cerebral palsy about 550,000; multiple sclerosis nearly 250,000 and muscular dystrophy almost 200,000 persons.[2] The incidence of one other crippling disease needs to be noted here and that is arthritis. The estimated incidence of all types of arthritis is

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[1] Health Statistics, op. cit., Series B, No. 9, (April, 1959), p. 9.

[2] Facts on the Major Killing and Crippling Diseases in the United States Today-1961, New York: The National Health Education Committe, Inc., p. 20.

approximately 150 per 1000 population.[1] Many of the patients with arthritis are homebound, some are ill with other problems and hospitalized in a general hospital, many are in nursing homes, rest homes and chronic disease hospitals.

The facilities for care of the ill (either chronic or acute) vary somewhat within the New England States. For instance, Maine has 189 nursing homes with a bed capacity of 2,491 which include beds for chronically ill patients; 187 are proprietarily owned and there are no publicly supported homes. Massachusetts has 484 nursing homes, with a bed capacity of 10,854, of which 468 are proprietarily owned, 14 are voluntary (church supported) and two are state supported. New Hampshire has 75 nursing homes, with a bed capacity of 1,681. Sixty-nine of the nursing homes are proprietarily owned and three are state supported.[2]

Personnel to staff these and all health agencies has an effect on the care that can be given. The following table illustrates how registered nurses are employed in the New England States, 1956-1958.[3]

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[1]Interview with Philip J. Doherty, Director of Public Relations, Massachusetts Chapter, Arthritis and Rheumatism Foundation, 89 Franklin Street, Boston, Mass., May, 1962.

[2]Jerry Solon and Anna Mae Baney, "Ownership and Size of Nursing Homes," Selected Articles on Nursing Homes, U.S. Department of Health, Education, and Welfare, Public Health Service, Washington, D.C., 1960, Table 1, p. 15.

[3]Facts About Nursing-1961, American Nurses' Association, New York, Table 4, p. 12.

Table 7.--Place of Employment of Registered Nurses in the New England States,1956-1958

State	Total	Hosp.	SON	Hosp. and SON	Public Health	School Nurse	Private Duty	Ind.	Office	Other	Field not reported
Conn.	13,566	55.5	2.1	.1	4.3	3.0	20.7	4.6	5.2	1.0	3.0
Maine	2,373	60.3	2.4	-	5.3	-	20.8	2.7	6.0	.5	1.5
Mass.	15,302	56.4	3.7	-	5.3	2.7	16.5	3.7	4.4	4.8	2.5
N.H.	2,314	60.0	1.0	2.4	4.5	3.2	21.8	2.2	4.6	.3	-
R.I.	3,160	69.6	2.7	-	5.5	2.9	11.0	3.1	3.9	.9	.4
Vt.	1,316	59.3	3.3	.7	5.6	2.0	24.2	1.6	3.1	.2	-

It can then be estimated that there are the following number of registered nurses employed in the New England States in hospitals and public health agencies:

Table 8.--Estimated Number of Registered Nurses Employed in Hospitals and Public Health Agencies in the New England States, 1956-1958

State	Hospitals	Public Health
Connecticut	5,500	650
Maine	1,700	170
Massachusetts	9,000	800
New Hampshire	2,000	125
Rhode Island	2,000	175
Vermont	800	80

By comparison, the number of physical therapists seems very small.[1]

Table 9.--Number and Place of Employment of Physical Therapists in the New England States, 1962

State	Total Number	Place of Employment: Hospital	Public Health: Crippled Children	Other
Conn.	Unknown			
Maine	27	26	½ crippled children	½ mobile unit arthritis
Mass.	311	Unknown		
N.H.	24		1	1
R.I.	33		3	7 (V.A. & private)
Vt.	Unknown			

[1]Interview with the Presidents of the local chapters of the American Physical Therapy Association--Maine: David Harkins, Massachusetts: Helen Hillman, New Hampshire: Adelaide Berdeen, Rhode Island: Mary Du Bose, May, 1962.

A particularly important group in the care of the chronically ill are the registered physical therapists, and in the entire United States there are only about 10,000 of them.[1] Only two-fifths of the hospitals in the United States have physical therapy facilities.

The directors of a study in the care of the chronically ill have listed among the responsibilities of a registered nurse the "supervision of exercises."[2] In a social work textbook dealing with chronic disease Travis explains the role of the public health nurse. She says:

> The public health nurse's primary function is individualized health teaching. . . but she will often demonstrate to some member of the family how to care for the patient. . . and in helping the family give care which will prevent needless disability from bedsores, deformities. . . and other upsets.[3]

Windemuth describes the role of the nurse in the out-patient department. She believes the responsibility of the nurse is to see that all prescribed exercises are taught to patients with such problems as arthritis, cardiac disease, diabetes, gynecological difficulties, mastectomy, post natal and surgical problems.[4]

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[1]Interview with Helen Hillman, President, Massachusetts Chapter of American Physical Therapy Association, April, 1962.

[2]Chronic Illness in the United States, op. cit., IV, 184-185.

[3]Georgia Travis, Chronic Disease and Disability (Berkeley and Los Angeles: University of California Press, 1961), p. 14.

[4]Audrey Windemuth, The Nurse in the Out-Patient Department (New York: The Macmillan Co., 1957), pp. 406, 327, 428, 388, 519, 484, 512.

There are many exercises that have long been considered nursing procedures. For instance, according to Casagrande and Frost, Buerger's exercises are used both for thromboangiitis obliterans and arteriosclerosis obliterans.[1]

Many nursing texts suggest that deep breathing and coughing exercises for routine surgical patients are prescribed by the doctor as a nursing procedure. According to MacVicar, nurses are expected to teach and supervise coughing exercises for patients who have had thoracic surgery.[2] Even though these exercises are precise and somewhat complicated, they must be performed routinely around the clock, seven days a week.

Trends in the management of medical and surgical patients have influenced exercise programs in many ways--early ambulation is one. The nurse cannot assist a patient to walk until his muscles are strong enough to support him and until his joints will move through an appropriate range of motion. So almost without intent the nurse must prepare the patient before the order for ambulation can be effectively carried out. And, of course, ambulation is in itself active exercise.

Many of the aids used by nurses in ordinary activities become exercise equipment. The foot board may be used principally to keep the bedding off a toe ulcer, but the patient may

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[1]Casagrande and Frost, op. cit., p. 302.

[2]Jean MacVicar, "Exercises Before and After Thoracic Surgery," American Journal of Nursing, LXII (January, 1962), pp. 61-63.

use it as an exercise board when he pushes against it to raise himself up in bed. The trapeze, the side board, or the rope may be attached to a patient's bed to assist him to turn, but both the self-turning and pulling are active resistive exercises. Even the bath itself may be given as a series of passive range of motion exercises as suggested by Brown.[1]

There seems to be no doubt as to the value of exercise or the need for exercise. The confusion arises, however, when responsibility needs to be assigned. Nursing authorities vary from identifying specific exercises as specific nursing responsibilities, to merely mentioning the fact that "prevention of deformity" is a nursing responsibility. Those exercises that need to be carried out many times during the course of a day have seemed to become nursing responsibilities primarily because the physical therapist is not available. Doctors frequently write orders for foot board, coughing exercises and Buerger's exercises as nursing responsibilities.

MacDonald has cited three studies which show that nurses do not assume responsibility for exercises even though they understand the need and have been taught the exercises.[2] However, the great difference between nurses carrying out exercises and the physical therapist assuming the same responsibility is that the physical therapist cannot accept a

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[1]Brown, op. cit., p. 463.

[2]MacDonald, op. cit., p. 3.

patient for treatment unless the patient is referred to her specifically for physical therapy. Gill has made a similar study, part of which is concerned with nursing responsibility for the exercises needed by a patient who has had a radical mastectomy.[1] Ninety-three per cent of her respondents considered it a definite responsibility of the nurse to discuss with the doctor the need for exercises if he failed to prescribe them.[2]

With the increase in our aging population, as well as the increase in radical but lifesaving medical and surgical procedures there is an increasing need for involving the nurse in specific programs of exercises to maintain muscle tone, prevent deformities and increase strength. Sheer numbers of people who could benefit from such a program coupled with a short supply of physical therapists would make it impossible for the physical therapists to be the only rehabilitation personnel involved in therapeutic exercise programs.

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[1]Eleanor K. Gill, "A Study to Determine the Extent to Which Nurses Recognize and Believe They Meet the Needs of the Radical Mastectomy Patient and the Extent to Which the Patients Think Their Needs Are Met" (unpublished Master's thesis, Boston University, School of Nursing, August, 1960).

[2]Ibid., p. 58.

CHAPTER III

METHODOLOGY

Selection and Description of Sample

When it was decided to attempt an investigation of nursing responsibilities concerning exercises, MacDonald's thesis was suggested as a source of reference with the possibility of doing a replication of her study. A letter was written to MacDonald asking for her permission to repeat her study on the basis of her second recommendation: "That a similar study be done using orthopedists, neurologists, general practitioners, and physiatrists as participants,"[1] and asking permission to use her tool (both definitions and questionnaire). On the basis of her first recommendation--"That a replication of the study be done using a larger sampling of physiatrists, nurse physical therapists, non-nurse physical therapists and rehabilitation nurses as participants"[2]--it was decided to use the following as participants: neurologists, orthopedists, physiatrists, rehabilitation nurses,

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[1]Mary M. MacDonald, "Expectations of Recognized Authorities Regarding Exercise Procedures for Which Registered Nurses May Assume Responsibility" (unpublished Master's thesis, School of Nursing, Boston University, August, 1961), p. 67.

[2]Ibid., pp. 66-67.

nurse physical therapists and non-nurse physical therapists, and to confine the study to persons working in the six New England States. A letter was promptly received from MacDonald granting permission to repeat the study and to use the questionnaires and definitions.[1]

Subsequently, letters were sent to the secretaries of the American Boards of Orthopaedic Surgery, Neurology, Physical Medicine and Rehabilitation, and to the Executive Director of the American Physical Therapy Association asking them to submit names of qualified persons who might be willing to participate in this study. Letters were received from all the secretaries of the Boards stating that it was against their policy to recommend names of doctors who are Diplomates of the Boards. The reply from the Director of the American Physical Therapy Association was delayed for a long period due to her absence from the office. Names and addresses of suggested participants were included for each New England state except Vermont.

Because of the unavoidable delay in obtaining the names of the nurse and non-nurse physical therapists, the Presidents of the local chapters of the American Physical Therapy Association in each state were contacted by phone or in person as far as possible. States not contacted were Connecticut and Vermont. Ultimately three names of partici-

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[1]Letter from Mary M. MacDonald, February 9, 1962. Appendix A.

pants were used from the list submitted by Miss Blair, President of the American Physical Therapy Association. Each physical therapist offered to be a participant in the study and suggested the name of a nurse physical therapist who might be willing to participate.

Names of rehabilitation nurses were selected by the Chairman of the Medical-Surgical Department of the School of Nursing at Boston University. All were graduates of the program of Rehabilitation Nursing at Boston University.

A list of Diplomates in Orthopedics, Neurology and Physical Medicine was made using the Medical Directory as reference. From this list names were recommended by the Chairman of the Medical-Surgical Department of the School of Nursing at Boston University.

Procurement of Data

The data were procured over a period of three months. Letters were sent to the suggested respondents, explaining the purpose of the study, how their names had been selected, and asking their assistance as respondents. A self-addressed post card was enclosed with each letter. The questionnaire, definitions, and instructions were forwarded as post cards were received indicating a willingness to participate in the study. For those persons whose names were received late, a similar letter of explanation was written and the letter and tool sent directly with a request to return the questionnaire unanswered if they were unable to participate.

Two neurologists did not return the post card, one refused because of illness, and one refused without giving a reason. Three alternates were then chosen.

One orthopedist did not answer and two who answered indicating a willingness to participate did not return the questionnaire by May 15th. Three alternates were again chosen. One orthopedist wrote asking for further instructions in how the questionnaire should be answered.

One physiatrist did not answer and one who did answer, did not return the questionnaire. Since there is not a physiatrist in Vermont, two physiatrists were selected from New Hampshire.

One nurse physical therapist did not return the questionnaire because of sudden serious illness. An alternate was chosen but not from the same state. One physical therapist was away on vacation and did not receive the questionnaire. An alternate was again chosen but not from the same state.

A card of reminder was sent to all respondents who had returned the card indicating a willingness to participate, but who had not returned the questionnaire by May 15th.

A telephone call was made to those persons to whom the questionnaire had been sent directly and who had not returned it on May 28th.

Two questionnaires returned early were not completed as directed. As a consequence of this, it was decided to add the words "Be sure that there are seven checks on each page"

to the instruction sheet. Most of the remaining questionnaires were returned correctly answered.

Tools Used to Collect Data

The tool used was exactly as developed by MacDonald. It consisted of a questionnaire describing various types of exercises and inquiring as to the degree of responsibility which a registered nurse should assume for each.[1] Definitions of therapeutic exercises were those she used based on a study by Lawrence[2] in which the following exercises were defined: active, assistive active, resistive, passive stretch, active assistive stretch, muscle setting or static exercises, and manipulation. All these were used except "manipulation."

The areas of responsibility used by MacDonald were based on a study by Stillar.[3] The four areas were defined as follows:

1. Instruction and supervision of patient without consultive assistance
2. Instruction and supervision of patient with consultive assistance
3. Supervision of patient following instruction of the patient by a physical therapist
4. Verbal reminder to patient relative to exercise procedures.

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[1]Appendix B.

[2]Dorothea M. Lawrence (Major, U.S.A.F.) "Variations in Therapeutic Exercise Terminology" (unpublished Master's thesis, Division of Physical Therapy, Department of Hygiene, Stanford University, August, 1954), pp. 60-61.

[3]Edith M. Stillar, "Range of Motion Exercise in Nursing Care" (unpublished Master's thesis, School of Nursing, Boston University, 1957).

In order to indicate level of responsibility MacDonald decided to divide this into three categories: 1) any patient, 2) selected patients, and 3) no patient.[1]

The final section of the questionnaire asked for pertinent data on the professional experience of the respondents.

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[1] MacDonald, op. cit., pp. 25-26.

CHAPTER IV

PRESENTATION, DISCUSSION AND INTERPRETATION OF DATA

This study was concerned with the expectations of four physiatrists, five rehabilitation nurses, twelve physical therapists, of whom six had nursing background, four neurologists, and four orthopedists regarding the kinds of exercise procedures for which registered nurses may assume responsibility. The replies of the first twenty-one respondents listed will be compared with the replies of similar respondents from MacDonald's study. In addition, a report will be made of the replies from the four neurologists and four orthopedists who participated in this study. The total of twenty-nine respondents represented a sampling of the six New England States. Data were obtained by a mailed questionnaire to each of the participants. The findings from the data obtained, plus the comparison between these data and those of MacDonald will be presented, discussed and interpreted in this chapter.

Data obtained relative to the professional background of the participants showed a wide variation in experience in the specialty of from one year to forty years. Rehabilitation nurses had one to five years in the specialty of rehabilitation nursing in addition to many years of orthopedic or neurological

nursing for some and medical-surgical nursing for others. The nurse physical therapists all had over ten years experience. The non-nurse physical therapists had six years experience or over. Orthopedists ranged from one year to over ten years experience. Neurologists were equally divided, as there were two with six to ten years and two with over ten years experience. The physiatrists had over ten years experience for three and six to ten years for the fourth.

Eighteen of the respondents who completed the professional work experience sheet said that the registered nurses in their facility did assume responsibility for exercise procedure. Nine responded that the nurse did not assume responsibility for exercise procedure. In the comment following this question, three replied that nurses in their facility assume responsibility for range of motion exercises, nine said active or "simple" active exercises, nine mentioned passive exercises, three muscle setting, three passive stretch, one mentioned active assistive exercises, one said active exercises after the program had been established by a physical therapist, one said any exercise by a specially "trained" orthopedic nurse and one said the responsibility of the nurse was limited to reminding patients to do the exercises that had been taught by the physical therapist.

Question number three asked whether the respondent had taught exercise procedures within the last year to a registered nurse. Twenty-three answered that they had taught registered

nurses and five answered that they had not. Of the five who gave a negative answer, one was a director of nursing, one an instructor of nursing students, one a public health nursing advisor, one a physical therapist whose only contact with a nurse was with a rehabilitation nurse specialist, and the last was a neurologist.

Question number four asked the respondent if he had ever actively encouraged registered nurses to participate in exercise programs. All answered in the affirmative. The comments which followed showed a wide variety of replies. All the rehabilitation nurses felt this responsibility to encourage nurses. Three of them added the reservation that the nurse should work closely with, or be under the supervision of, a physical therapist. Two of the nurse physical therapists also made this same comment. One nurse physical therapist said that she worked closely with the school nurse in programs to improve posture. Two physical therapists mentioned that they were actively involved in teaching and supervising exercise programs for student nurses. One physical therapist said that she believed that exercises need to be done for certain patients and that if a physical therapist is available to do the exercises or teach them it should be her function, but if not, the nurse should assume this function for the welfare of the patient. One orthopedist taught special exercises to the nurses on his service. Another suggested that special duty nurses needed to know and carry out exercises. Another said

that he teaches nurses those exercises necessary to prevent deformities and maintain strength. Another said he teaches nurses to care for exercise needs of both in-patients and out-patients. One physiatrist said that passive range of motion exercises and crutch walking are taught in the school of nursing attached to his facility, but that he had found that he had to re-instruct the nurses on an individual patient-nurse basis. Another physiatrist commented that he encouraged nurses to perform exercises only "after very careful instruction." The three neurologists who commented were actively teaching nurses. One mentioned that he instructed the nurses in specific exercises during rounds and that he sometimes instructed the head nurse so that she could teach her staff. Another neurologist said that he thought that nurses "could do all the exercises outlined." The other neurologist made the following comment: "All nurses should give passive motion to patients hospitalized with chronic illness in which the patient cannot move."

Data were secured relative to the opinions of respondents regarding degrees of responsibility which registered nurses should assume for each of the seven types of exercises. Answers of several respondents indicated an apparent divergence of interpretation relative to the statement in the questionnaire about responsibility for verbal reminders. A similar

situation was found by MacDonald.[1] In the present study the confusion seemed to be in regard to passive exercises. Three respondents questioned whether "verbal reminder" applied to these exercises, even though it is common practice to teach patients with hemiplegia, radical mastectomy, arthritis, etc., to exercise their affected parts with their unaffected parts. Again, as in MacDonald's study, some of the respondents (18) indicated a reluctance to allow the nurse to verbally remind the patient to carry out his exercise program although some of these same respondents would allow the nurse to teach the exercises. Therefore, as in MacDonald's study, this statement of responsibility was eliminated from the findings.

The findings of each exercise will now be reviewed and compared to the findings of MacDonald. Replies will be reported in percentages since the numbers of participants in the two studies varied. In this study not all of the participants indicated an opinion on each of the sections of the questionnaire. The differences in per cents between the studies will not be considered significant unless they exceed ten per cent. The findings will then be reviewed from two points of view: judgment of the respondents considered as a group and differences between the groups of specialists.

Table 10 presents the replies in per cents from rehabilitation nurses, nurse physical therapists, non-nurse

[1]Mary M. MacDonald, "Expectations of Recognized Authorities Regarding Exercise Procedures for Which Registered Nurses May Assume Responsibility" (unpublished Master's thesis, School of Nursing, Boston University, August, 1961), p. 34.

physical therapists, and physiatrists from both this study (black figures) and MacDonald's study (red figures). This table is concerned with opinions of these people regarding the degree of responsibility which registered nurses may assume for patients for whom active exercise has been medically prescribed.

As a group, rehabilitation nurses were the most liberal and the most consistent in their opinion of responsibility for this exercise in both studies. This study indicates more nurses in this group would allow "instruction and supervision" (60%) for any patient than appeared in MacDonald's study (25%). This group in MacDonald's study all indicated that instruction or establishment of routine by a physical therapist was sufficient to allow the nurse to carry out this exercise on "any patient" (100%), whereas in this study 25% of the respondents thought this should be reserved for "selected patients." However, if the two categories of "any patient" or "selected patient" are considered together the rehabilitation nurses in both studies indicate that they consider this a nursing function in all categories except for one reply of "no patient" for "instruction and supervision."

The nurse physical therapists and the non-nurse physical therapists were the most conservative in their answers. Both studies indicated that this group does not feel that nurses should instruct "any patient" without consultation of some kind. This study indicates a greater freedom for instruc-

Table 10.--Degree of Responsibility for Active Exercise*

Degrees of Responsibility	Rehabilitation Nurses			Physical Therapists						Physiatrists		
				Nurse			Non-Nurse					
	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.
	60	40	0	0	50	50	17	17	66	33	0	67
Instruction and supervision	25	50	25	0	50	50	0	25	75	17	50	33
Instruction and supervision with consultation from:	60	40	0	50	33	17	0	66	34	0	100	0
1) rehabilitation nurse	50	50	0	25	50	25	25	50	25	33	50	17
2) physiatrist	100	0	0	50	50	0	17	33	50	0	100	0
	100	0	0	25	75	0	75	0	25	50	50	0
	100	0	0	50	50	0	17	66	17	0	100	0
3) physical therapist	100	0	0	25	75	0	50	50	0	33	67	0
Supervision of performance following:	75	25	0	50	50	0	34	66	0	33	67	0
1) initial inst. by p.t.	100	0	0	0	100	0	25	50	25	17	67	17
	75	25	0	66	17	17	34	66	0	0	100	0
2) routine estab. by p.t.	75	25	0	0	100	0	50	25	25	17	67	17

*Black figures are data in per cents from the present study
Red figures are data in per cents from MacDonald's study

Legend: pt. - patient
sel. - selected
inst. - instruction
estab.-established
p.t. - physical therapist

tion and supervision of any patient following consultation (50%, 50%, and 50%) than does MacDonald's study (25%, 25%, and 25%). Again, when the replies are considered for "any patient" and "selected patients" the majority of the respondents in both studies indicate that this is a nursing function after consultation.

Physiatrists were about equally divided between allowing instruction and supervision on "any" and "selected patients" and "no patient" when both studies are considered together. The replies from both studies regarding instruction and supervision after consultation, with one exception in MacDonald's study, indicated that they think nurses should "instruct and supervise" and "supervise performance" on "any" or "selected patients."

Of the seventy-two possible replies in each study this study showed eight replies to the effect that "no patient" should receive instruction and supervision from a nurse, three of these in the "instruction and supervision" category and four in the category of instruction and supervision after consultation from a rehabilitation nurse. MacDonald's study showed twelve "no patient" answers, four in the "instruction and supervision" category, three after consultation with a rehabilitation nurse, one after consultation with a physiatrist, two after initial instruction by a physical therapist and two after the routine has been established by a physical therapist.

Table 11 is concerned with the opinions of this same

Table 11.--Degrees of Responsibility for Active Assistive Exercise*

Degrees of Responsibility	Rehabilitation Nurses			Physical Therapists						Physiatrists		
				Nurse			Non-Nurse					
	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.
Instruction and supervision	25	75	0	0	50	50	17	0	83	0	33	67
	25	50	25	0	50	50	0	25	75	17	50	33
Instruction and supervision with consultation from:	40	60	0	50	50	0	17	50	33	0	100	0
1) rehabilitation nurse	50	50	0	0	75	25	0	50	50	33	50	17
	25	75	0	66	33	0	34	50	17	0	67	33
2) physiatrist	50	50	0	25	75	0	50	25	25	50	50	0
	25	75	0	66	34	0	34	50	17	0	67	33
3) physical therapist	50	50	0	25	75	0	25	75	0	33	67	0
Supervision of performance following:	60	40	0	50	17	34	17	83	0	0	100	0
1) initial inst. by p.t.	75	25	0	0	100	0	0	75	25	17	67	17
	75	25	0	50	17	34	17	83	0	25	75	0
2) routine estab. by p.t.	75	25	0	0	100	0	0	75	25	17	67	17

*Black figures are data in per cents from the present study
Red figures are data in per cents from MacDonald's study

Legend: pt. - patient
sel. - selected
inst. - instruction
estab. - established
p.t. - physical therapist

group regarding the degree of responsibility which registered nurses may assume for patients for whom active assistive exercise has been medically prescribed.

The replies of the group as a whole are very similar to the replies in Table 10. Rehabilitation nurses again are more liberal in their opinion than the other groups, but in both studies they tend to allow greater freedom for "selected patients" than "any patient" as with the active exercise. With one exception in MacDonald's study, the group thinks that this exercise is a nursing responsibility on either "any patient" or "selected patients." Nurse physical therapists and non-nurse physical therapists were the most conservative groups with the largest per cent of "no patient" answers. Nurse physical therapists in this study indicated "no patient" more frequently than in MacDonald's study with 34% of the participants stating that the nurse's function did not include this exercise even after initial instruction or establishment of the routine by a physical therapist. But this group also indicates "any patient" more frequently than MacDonald's study, after consultation with rehabilitation nurse (50% in this study compared to 0% in MacDonald's study), physiatrist (66% compared to 25%), and physical therapist (66% compared to 25%).

Physiatrists in this study showed fewer "any patient" selections than in MacDonald's study. There seems to be some inconsistency in the reply that the physiatrists (100%) would allow the nurse to assume responsibility for this exercise on

"selected patients" after consultation with a rehabilitation nurse, but only 67% would approve it after consultation with a physiatrist or physical therapist. MacDonald's study does not show this inconsistency. When "any patient" and "selected patients" are considered together, the answers indicate that the majority of participants in both studies think that this is a nursing function. There are ten "no patient" answers in this study and twelve in MacDonald's study.

Table 12 is concerned with the opinion of this group regarding the degree of responsibility which registered nurses may assume for patients for whom resistive exercise has been medically prescribed.

In both studies the rehabilitation nurses do not think that nurses should assume this responsibility for instruction and supervision with "any patient." They are equally divided as to the responsibility on "selected patients" and "no patients" in this study and divided 25% to 75% in MacDonald's study. Twenty-five per cent of this group in this study is of the opinion that nurses may do this exercise for "any patient" after consultation with a rehabilitation nurse; no one checked this answer in MacDonald's study. Her study showed 25% in the "no patient" category for this consultation; this study had no answer in this category. Except for the 75% of "no patient" replies mentioned, the rehabilitation nurses think that this is a nursing function on "any" or "selected" patients with consultation. Nurse physical therapists in both studies, however,

Table 12.--Degrees of Responsibility for Resistive Exercises*

Degrees of Responsibility	Rehabilitation Nurses			Physical Therapists						Physiatrists		
				Nurse			Non-Nurse					
	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.
	0	50	50	0	17	83	17	0	83	0	33	67
Instruction and supervision	0	25	75	0	50	50	0	25	75	0	33	67
Instruction and supervision with consultation from:	25	75	0	0	83	17	17	50	33	0	67	33
1) rehabilitation nurse	0	75	25	0	75	25	25	25	50	17	67	17
	25	75	0	0	83	17	17	33	50	33	33	33
2) physiatrist	25	75	0	0	100	0	50	25	25	33	67	0
	40	60	0	0	83	17	17	50	33	0	67	33
3) physical therapist	50	50	0	0	100	0	25	75	0	17	83	0
Supervision of performance following:	40	60	0	0	50	50	17	66	17	0	100	0
1) initial inst. by p.t.	75	25	0	0	100	0	25	50	0	0	100	0
	75	25	0	0	83	17	17	66	17	0	100	0
2) routine estab. by p.t.	75	25	0	25	75	0	25	50	0	0	100	0

*Black figures are data in per cents from the present study
Red figures are data in per cents from MacDonald's study

Legend: pt. - patient
sel. - selected
inst. - instruction
estab. - established
p.t. - physical therapist

are consistent (with 25% exception in MacDonald's study) in their opinion that this is not a nursing function with "any patient" under any circumstances. This study indicates a higher per cent of "no patient" replies (83%) for instruction and supervision than MacDonald's study (50%) and higher "no patient" replies "following initial instruction by physical therapist" (50%) than MacDonald's study (0%).

The non-nurse physical therapists' replies were similar in per cents to the replies made to question two. These non-nurse physical therapists do not agree in per cent of respondents (with more in MacDonald's study) in the category of consultation by various people. In this study 17% checked "any patient," 50% "selected patient," and 33% "no patient" following consultation from a rehabilitation nurse while in MacDonald's study the replies for the same type of consultation showed 25% "any patient," 25% "selected patient," and 50% "no patient." Differences of opinions were similar in per cents between and within the studies after consultation with a physiatrist or a physical therapist.

The per cent of opinions of physiatrists were similar in both studies for the category "instruction and supervision" with 33% "selected patient" and 67% "no patient" and in supervision of performance following "initial instruction by a physical therapist" and routine established by a physical therapist, being both 100% for both studies in the "selected patient" group. There was some difference between the two

studies in the section: "Instruction and supervision with consultation." Sixty-seven per cent of the physiatrists agreed to this procedure on "selected patients" with consultation from rehabilitation nurse on both studies, 33% after consultation with physiatrist in this study and 67% in MacDonald's study. There are many more "no patient" answers in this study (17) than in either of the two exercises already discussed, but fewer "no patient" answers in MacDonald's study (9).

Table 13 is concerned with the opinions of this group regarding the degree of responsibility which registered nurses may assume for patients for whom passive exercise has been medically prescribed. Since passive exercises are often considered range of motion it is surprising to find rehabilitation nurses (25%) in MacDonald's study stating that it is not the responsibility of the nurse to instruct and supervise the activity. Both studies showed 100% of the rehabilitation nurses thought the nurse could perform this activity after consultation with a physiatrist but only 75% of MacDonald's respondents and all of the respondents of this study thought they could do this after consultation with a physical therapist. All rehabilitation nurses except 25% in the category "instruction and supervision" in MacDonald's study, checked either "any patient" or "selected patient."

Nurse and non-nurse physical therapists in both studies did not approve the nurse instructing and supervising "any patient," with one exception in this study. The answers

Table 13.--Degrees of Responsibility for Passive Exercise*

Degrees of Responsibility	Rehabilitation Nurses			Physical Therapists						Physiatrists		
				Nurse			Non-Nurse					
	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.
Instruction and supervision	50	50	0	0	67	33	33	0	67	0	33	67
	50	25	25	0	75	25	0	25	75	33	33	33
Instruction and supervision with consultation from:	100	0	0	17	83	0	33	33	33	33	67	0
1) rehabilitation nurse	50	50	0	25	75	0	25	50	25	50	33	17
	100	0	0	33	67	0	33	17	50	67	33	0
2) physiatrist	100	0	0	25	75	0	50	25	25	67	33	0
	100	0	0	33	67	0	33	50	17	33	67	0
3) physical therapist	75	25	0	25	75	0	50	50	0	50	50	0
Supervision of performance following:	75	25	0	17	67	17	17	67	17	33	67	0
1) initial inst. by p.t.	100	0	0	25	75	0	50	25	25	33	67	0
	50	50	0	17	83	0	17	83	0	25	75	0
2) routine estab. by p.t.	75	25	0	25	75	0	50	25	25	33	67	0

*Black figures are data in per cents from the present study
Red figures are data in per cents from MacDonald's study

Legend: pt. - patient
sel. - selected
inst. - instruction
estab. - established
p.t. - physical therapist

regarding instruction and supervision with consultation did not vary to a large degree between the two studies. Nurse physical therapists did not indicate any "no patient" checks in either study, but non-nurse physical therapists indicated "no patient" opinion except for the category of consultation with a physical therapist in MacDonald's study.

There were no "any patient" replies by physiatrists for "instruction and supervision" in this study but 33% of physiatrists would allow the nurse to assume this responsibility in MacDonald's study. Thirty-three per cent would allow this for the nurse on "selected patients" in both studies, but 67% checked "no patient" in this study and 33% in MacDonald's study. Except for 17% "no patient" replies in MacDonald's study there were no other such replies in either study after any type of consultation or supervision of performance.

In this study there were 9 "no patient" answers. In MacDonald's study there were 8 "no patient" answers.

Table 14 is concerned with opinions regarding the degree of responsibility which registered nurses may assume for patients for whom passive stretch exercises have been medically prescribed. In each group of respondents in both studies the largest percentage is in the "no patient" category for instruction and supervision. All nurse and non-nurse physical therapists in MacDonald's study, except one, saw this as a nursing function after consultation with a physiatrist or a physical therapist for "selected patients" but in this study

Table 14.--Degrees of Responsibility for Passive Stretch*

Degrees of Responsibility	Rehabilitation Nurses			Physical Therapists						Physiatrists		
				Nurse			Non-Nurse					
	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.
	0	20	80	0	33	67	17	0	83	0	33	67
Instruction and supervision	0	0	100	0	25	75	0	0	100	0	33	67
Instruction and supervision with consultation from:	50	50	0	0	33	67	33	33	33	33	67	0
1) rehabilitation nurse	0	50	50	0	50	50	0	50	50	17	50	33
	50	50	0	0	50	50	33	17	50	67	33	0
2) physiatrist	50	50	0	0	100	0	0	75	25	33	50	17
	40	60	0	0	50	50	17	50	33	33	67	0
3) physical therapist	25	75	0	0	100	0	0	100	0	17	67	17
Supervision of performance following:	25	50	25	17	17	67	17	67	17	33	67	0
1) initial inst. by p.t.	50	50	0	0	75	25	0	75	25	17	67	17
	25	75	0	17	50	33	17	67	17	33	67	0
2) routine estab. by p.t.	50	50	0	0	100	0	0	75	25	17	67	17

*Black figures are data in per cents from the present study
Red figures are data in per cents from MacDonald's study

Legend: pt. - patient
sel. - selected
inst. - instruction
estab. - established
p.t. - physical therapist

only 50% of this group thought that this was a nursing function in this category. Seventeen per cent of both nurse and non-nurse physical therapists thought that supervision of performance for "any patient" after initial instruction by a physical therapist was proper, but none of MacDonald's respondents checked this item.

Physiatrists' answers were the same for instruction and supervision of "any patient" in both studies. Thirty-three per cent thought this was a nursing function for "selected patients" and 67% checked "no patient" in this category. The physiatrists were divided in their opinion about the responsibility of the nurse for this exercise with consultation. In this study 33% thought that this was the responsibility of the nurse for "any patient" after consultation with a rehabilitation nurse, while only 17% of the same group in MacDonald's study agreed. Sixty-seven per cent assigned this as a nursing function for "selected patients" in this study and 50% in MacDonald's study. Thirty-three per cent checked "no patient" in MacDonald's study. Following consultation with one of their own group, 67% of the physiatrists in this study thought this exercise could be assigned to a nurse for "any patient" and 33% felt that it should be reserved for "selected patients." There were no "no patient" replies in this study. In MacDonald's study only 33% of the physiatrists thought this a nursing function for "any patient," 50% for "selected patients" and 17% "no patient." After consultation with a physical therapist

the opinions of the physiatrists for this study were 33% "any patient" and 67% "selected patients;" for MacDonald's study it was 17% "any patient," 67% "selected patient" and 17% "no patient." Following initial instruction by a physical therapist or establishment of a routine by a physical therapist the physiatrists in MacDonald's study showed the same opinion as that for consultation with a physical therapist, 17% "any patient," 67% "selected patient," and 17% "no patient." In this study for these two degrees of responsibility they showed 33% "any patient" and 67% "selected patient." There were 15 "no patient" replies in each study.

Table 15 is concerned with the opinion of this group regarding the degree of responsibility which registered nurses may assume for active assistive stretch exercise which has been medically prescribed.

The results of the opinion of rehabilitation nurses in this study show a higher per cent for the "selected patient" category (60%) than for the previous exercise (20%) although MacDonald's results were identical (100% "no patient"). All of her respondents checked the "no patient" category for instruction and supervision whereas only 40% of this same occupational group checked "no patient" in this study. Fifty per cent of the rehabilitation nurses checked "no patient" after consultation with a rehabilitation nurse for this exercise in MacDonald's study, whereas 75% checked "any patient" in this study.

Table 15.--Degrees of Responsibility for Active Assistive Stretch*

Degrees of Responsibility	Rehabilitation Nurses			Physical Therapists						Physiatrists		
				Nurse			Non-Nurse					
	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.
Instruction and supervision	0	60	40	0	17	83	17	17	67	0	33	66
	0	0	100	0	25	75	0	0	100	0	33	67
Instruction and supervision with consultation from:												
1) rehabilitation nurse	75	25	0	17	33	50	33	33	33	0	100	0
	0	50	50	0	50	50	0	25	75	33	50	17
2) physiatrist	75	25	0	0	67	33	40	20	40	66	33	0
	50	50	0	0	100	0	0	75	25	17	67	17
3) physical therapist	60	40	0	0	80	20	33	33	33	0	100	0
	25	75	0	0	100	0	0	100	0	17	67	17
Supervision of performance following:												
1) initial inst. by p.t.	25	75	0	0	20	80	17	67	17	33	66	0
	50	50	0	0	75	25	0	75	25	0	100	0
2) routine estab. by p.t.	25	75	0	0	80	20	17	67	17	33	66	0
	50	50	0	0	100	0	0	75	25	0	100	0

*Black figures are data in per cents from the present study
Red figures are data in per cents from MacDonald's study

Legend: pt. - patient
sel. - selected
inst. - instruction
estab. - established
p.t. - physical therapist

Seventeen per cent of the nurse physical therapists checked "any patient" after consultation with a rehabilitation nurse in this study but there were no other checks in this column for this group in either study. Eighty per cent of the nurse physical therapists would not allow the nurse to perform this exercise after initial instruction by a physical therapist in this study, but only 25% of the same group checked this item in MacDonald's study.

Non-nurse physical therapists all checked "no patient" in MacDonald's study under the section "instruct and supervise" but only 67% checked this item in this study with 17% saying "any patient" and 17% saying "selected patient."

There was a variety of opinions expressed by physiatrists in both studies particularly as regarded their opinion of responsibility following consultation. All physiatrists in this study checked "selected patient" for both rehabilitation nurse and physical therapist but only 33% checked "selected patient" after consultation by a physiatrist.

There were 14 "no patient" answers in each of these studies.

Table 16 is concerned with opinions concerning the degree of responsibility which the graduate nurse may assume for static or muscle setting exercise which has been medically prescribed. Since this is an exercise that the nurse can only describe or demonstrate and depends entirely on the patient's ability to contract his own muscles and does not involve joint

Table 16.--Degrees of Responsibility for Static or Muscle Setting

Degrees of Responsibility	Rehabilitation Nurses			Physical Therapists						Physiatrists		
				Nurse			Non-Nurse					
	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.
Instruction and supervision	60	20	20	17	50	33	0	17	83	33	33	33
	25	75	0	0	50	50	0	50	50	0	67	33
Instruction and supervision with consultation from:	80	20	0	50	50	0	50	17	33	100	0	0
1) rehabilitation nurse	75	25	0	25	50	25	50	25	25	33	50	17
	75	25	0	50	50	0	50	0	50	75	25	0
2) physiatrist	100	0	0	50	50	0	75	0	25	67	33	0
	75	25	0	50	50	0	50	33	17	75	25	0
3) physical therapist	100	0	0	50	50	0	75	25	0	50	50	0
Supervision of performance following:	80	20	0	80	20	0	33	67	0	100	0	0
1) initial inst. by p.t.	100	0	0	25	50	25	0	75	25	33	50	17
2) routine estab. by p.t.	66	33	0	80	20	0	33	67	0	100	0	0
	100	0	0	25	75	0	0	75	25	33	50	17

Key: This study: black figures
MacDonald's study: red figures

Legend: pt. patient
sel. - selected
inst. - instruction
estab. - established
p.t. - physical therapist

motion, it is surprising to find that so many respondents checked "selected" or "no patient" categories for this exercise. In this study 20% of the rehabilitation nurses, 33% of the nurse physical therapists, 83% of the non-nurse physical therapists, and 33% of the physiatrists said a nurse could instruct and supervise "no patients." In MacDonald's study 33% of the physiatrists, 50% of the physical therapists, and 50% of the nurse physical therapists checked this "no patient" category. The majority of rehabilitation nurses and nurse physical therapists checked "any patient" or "selected patient" for all categories.

In both studies 50% of the non-nurse physical therapists checked "any patient" following consultation with a rehabilitation nurse. Seventeen per cent in this study and 25% in MacDonald's study checked "selected patient;" 33% in this study and 25% in MacDonald's study checked "no patient." Fifty per cent checked "any patient" and 50% "no patient" in this study after consultation with a physiatrist, while in MacDonald's study 75% checked "any patient" and 25% checked "no patient." Seventeen per cent of the non-nurse physical therapists in this study checked "no patient" after consultation with a physical therapist.

The opinion of the physiatrists for the degree of responsibility for instruction and supervision in this study was exactly divided, with 33% checking "any patient," "selected patient," and "no patient." In MacDonald's study there

were no "any patient" checks, 67% checked "selected patient" and 33% checked "no patient." All of the physiatrists in this study checked "any patient" following consultation with a rehabilitation nurse but in MacDonald's study only 33% checked this column, 50% checked "selected patient," and 17% checked "no patient." Following consultation with a physical therapist there were no "no patient" replies in either study. However, following initial instruction by a physical therapist and establishment of a routine by a physical therapist, only 33% of the physiatrists in MacDonald's study considered this a nursing responsibility for "any patient," whereas 100% checked this column in this study. Fifty per cent in MacDonald's study would allow this responsibility for "selected patients" and 17% checked "no patient."

There are 12 "no patient" categories checked in MacDonald's study and 7 in this study.

Table 17 is concerned with the category of patients to whom respondents would allow registered nurses to administer exercises. It considers the type of exercise, the "any patient," "selected patient," and "no patient" category. Both numbers of answers given and the per cent of the total are given for both studies. This includes up to six answers for each exercise for each respondent.

The highest total per cent in both studies was found in the "selected patient" group with 54% of the answers falling into this group in MacDonald's study and 48% in this study.

Table 17.--Category of Patients to Whom Respondents Would Allow Registered Nurses to Administer Exercises, by Type of Exercises. Comparison with MacDonald's Study in Numbers and Per Cent

Type of Exercise Procedure	Any Patient		%		Selected Patients		%		No Patient		%		Total	
Active	40	69	37	45	51	63	48	41	16	22	15	14	107[a]	154[b]
Active Assistive	28	51	27	33	63	78	58	51	17	25	15	16	108	154
Resistive	20	24	19	16	68	91	62	59	20	38	19	25	108	153
Passive	48	51	44	34	48	79	44	53	12	20	12	14	108	150
Passive Stretch	13	32	12	21	64	70	59	46	31	50	29	33	108	152
Active Assistive Stretch	11	32	11	21	68	81	62	53	29	39	27	26	108	152
Static or Muscle Setting	48	88	44	56	45	52	42	33	15	16	14	10	108	156
Total	208	347	28	32	407	514	54	48	140	210	18	20	755	1071

Key: This study: black figures
MacDonald's study: red figures

[a]One respondent failed to check this item
[b]Respondents did not all check all answers

The next highest group is "any patient" and the lowest "no patient." For individual exercises, both "passive" and "static" show 44% in the "any patient" category in MacDonald's study. In this study "static" exercise was highest (56%) in the "any patient" category with "active" second (45%) and "passive" third (34%). Lowest per cent in the "any patient" category in MacDonald's study was 11% for "active assistive stretch" and in this study the lowest was "resistive" with 16% replies in the "any patient" category. In MacDonald's study the highest per cent score for "selected patient" was 62% in both "resistive" and "active assistive stretch," with the lowest (42%) in the static. In this study high and low scores are in "resistive" (59%) and static (33%). In both studies the high score in the "no patient" category is for "passive stretch" with "active assistive stretch" second and "resistive" third.

Table 13 is a comparison of the opinions of doctors by degree of responsibility and type of exercise. The physiatrists included the participants of both studies. Neurologists and orthopedists were respondents in this study only. All of these respondents did not answer all the questions. Therefore percentages may be based on a few responses.

The majority opinion regarding active exercise was the same for two of the three groups. These two indicated that active exercise is a responsibility that the nurse may assume for "any patient." Active assistive exercise is reserved to "selected patients" as are all the rest, except that the

Table 18.--Comparison of the Responses of Doctors by Degree of Responsibility and Type of Exercise in Per Cents

Type of Exercise Procedure	Physiatrists*			Neurologists			Orthopedists		
	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.
Active	69	18	13	50	33	17	72	28	0
Active Assistive	16	66	18	33	50	17	37	53	10
Resistive	9	70	21	33	61	6	8	72	20
Passive	39	52	9	41	53	6	8	79	13
Passive Stretch	25	55	20	39	56	5	10	47	43
Active Assistive Stretch	34	57	9	41	59	0	0	77	23
Static or Muscle Setting	17	68	15	41	59	0	74	26	0

* Both studies included

majority of orthopedists (74%) thought that static or muscle setting exercises could be the nurse's responsibility for "any patient" and the majority of the other two groups reserved this for "selected patients." This may be because many orthopedic patients are healthy persons except for their bone or joint problem, they are usually alert and teachable, their immobilization is usually temporary but muscle wasting may be rapid if a part is immobilized without some type of exercise.

Physiatrists had an equally low "no patient" per cent of replies in both "passive" and "active assistive" exercises (9%) but 68% reserved this responsibility to "selected patients" for "static exercises."

Forty-one per cent of the neurologists agreed that active assistive exercises or static exercises may be done for "any patient" and 59% for "selected patients." There were no "no patient" checks in this study.

Table 19 compares the responses of rehabilitation nurses, nurse physical therapists, and non-nurse physical therapists by degree of responsibility and type of exercise.

Rehabilitation nurses were the most permissive group with the majority assigning this function to the nurse for "any patient" for active, passive, and muscle setting exercises. For all exercises they gave more replies in the category "any patient" than did the physical therapists.

Of the three groups the non-nurse physical therapists had the highest "no patient" averages with the exception of

Table 19.--Comparison of the Responses of Rehabilitation Nurses, Nurse Physical Therapists and Non-Nurse Physical Therapists by Degree of Responsibility and Type of Exercise in Per Cents*

Type of Exercise Procedure	Rehabilitation Nurses			Nurse Physical Therapists			Non-Nurse Physical Therapists		
	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.	Any Pt.	Sel. Pt.	No Pt.
Active	77	21	2	29	58	13	29	43	28
Active Assistive	48	50	2	28	56	16	18	53	29
Resistive	36	52	12	2	75	23	22	43	35
Passive	77	21	2	20	74	6	32	38	30
Passive Stretch	30	49	21	2	57	41	11	51	38
Active Assistive Stretch	36	48	16	1	62	37	13	49	38
Static or Muscle Setting	78	20	2	42	47	11	35	37	28

* Both studies included

passive stretch exercises, although the majority did agree that the nurse may assume these exercise functions on "selected patients." Although a majority of the nurse physical therapists also agreed that exercise function should be allowed on "selected patients," their average was much higher in this category than that of the non-nurse physical therapists.

Comparison between Table 18 and Table 19 again shows the non-nurse physical therapists to be the most conservative group, and the rehabilitation nurses the most liberal in their opinions concerning the degree of responsibility which a nurse may be expected to assume. Some of this may be explained by the fact that rehabilitation nurses have had a homogeneous graduate educational background in which the importance of exercise has been stressed. On the other hand, physical therapists come from a variety of backgrounds and may, in fact, not understand the preparation or role of the registered nurse as a member of the health team. Nutter, herself a nurse and physical therapy student, has written a research paper in which she investigated the awareness of freshmen, sophomore, junior, and senior physical therapy students concerning the role of the professional nurse and auxiliary nursing personnel.[1]

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[1]Gail Nutter, "A Study to Determine the Awareness of a Group of Physical Therapy Students of the Role of the Professional Nurse and Auxiliary Nursing Personnel Who Are Members of the Rehabilitation Team" (unpublished Research Paper, Boston University, Sargent College, 1962.)

The term "professional nurse" in this study, refers to nurses who are graduates of a four-year collegiate program. She says:

> The data revealed that the student in each of the four classes had a limited knowledge of the education, skills, and level of performance of the nurse and auxiliary nursing personnel with whom they will work as graduate physical therapists in planning for the care and treatment of patients.[1]

It has been this writer's experience that when a particular service may expect a number of patients of a kind whom the resident feels may all need specific exercises, these exercises become nursing functions and part of the "routine procedure" of care established by a particular resident. For example, a patient who has had an above-the-knee amputation may be positioned prone for certain periods of the day and instructed by the nurse to raise his stump in hyperextension for the purpose of preventing contractures and maintaining muscle tone. Once this procedure is agreed upon by the head nurse and resident it becomes routine nursing procedure unless a countermanding order is written by a doctor. Range of motion exercises may well be carried out on medical wards for patients who have hemiplegia. On some orthopedic services it may be that nurses routinely instruct patients in casts to perform static exercises. The fact that all patients who have conditions which predispose to contracture or muscle wasting are not referred to a physical therapist and do not actually experience these conditions would seem to indicate that either the patient

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[1] Ibid., p. 20.

himself prevents these complications through untaught exercise, or someone else, such as his own doctor or the nurse, teaches, performs,and/or supervises some exercise program for him.

If, as seems apparent from this study, the majority of physical therapists do not see even static exercises as a function of the nurse for "any patient" it would seem an insurmountable problem for them to even act as consultants to nurses for there are such large numbers of patients who would benefit from this type of exercise program.

Table 18 indicates that the majority of orthopedists thought that the nurse should be responsible for both active and static exercises for "any patient." Fifty per cent of the neurologists and 69% of the physiatrists also assigned active exercise to the nurse for "any patient." Does this mean that these doctors expect these exercises to be part of nursing routine covered by an order such as one to ambulate the patient or transfer him from bed to chair?

All the participants in the study, when asked if they had actively encouraged nurses to participate in an exercise program, answered "yes." It would seem from this, and the large per cent of participants who agree that the nurse may assume responsibility for "selected patients," that they are all aware of the need for exercise and the ability of the nurse to perform these exercises when medically ordered. But, does this mean that the doctors who encourage nurses to participate in an exercise program always include written orders for

specific exercises? Or does this mean that these doctors merely demonstrate, instruct, or supervise exercises and perhaps expect the nurse to carry out these exercises routinely from then on for similar patients?

If, under some circumstances, the nurse does establish certain exercise programs for selected patients, she then has a responsibility to seek medical direction for all exercise programs, as she identifies the need, with a variety of patients. Through the assistance of the professional staff within the facility, there may be persons who can act as consultants to assist her in developing adequate exercise programs. The nurse also needs to interpret her role and function to all members of the health team. It is not enough for her to know about the value of exercise or even to be skilled in giving therapeutic exercises--others must also know both her capabilities and limitations.

The literature quoted in Chapter II showed that the need for exercise programs in a variety of circumstances far exceeds the supply of physical therapists. Nurses and physical therapists need to work together with other members of the health team to meet this pressing health problem.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study was a replication of a study by Mary M. MacDonald in which she explored the expectations of recognized authorities regarding the kinds of exercise procedures for which registered nurses may assume responsibility. Both studies were justified on the basis of a need to clarify the role of the nurse in a therapeutic exercise program so that the nurse would feel more secure in accepting responsibility in such a program. In addition, this study explored the incidence of certain diseases and conditions which might benefit from an exercise program and the numbers of nurses and physical therapists who were available to carry out a therapeutic exercise program.

Literature was reviewed from four points of view:

1) That of medical and nursing authorities concerning the need for therapeutic exercises in certain conditions of illness, trauma, or disability. Although there was some difference of opinion as to when exercise should begin and the extent of the exercise program, all authorities agreed that there was a need for some therapeutic exercises

in the cases cited.

2) That of nursing authorities, and various other authorities, regarding the role of the nurse in therapeutic exercise programs for certain conditions. It was found that these authorities varied widely in their interpretation of nursing responsibilities for therapeutic programs and the terms used to identify responsibility were often vague. However, the authorities who identified the role of the nurse in an exercise program agreed that the nurse had some degree of responsibility.
3) The number of persons whose physical condition, in the situations cited, indicated that they might benefit from a therapeutic exercise program. These situations included examples of several of the common chronic diseases, traumatic injuries, birth injuries and diseases. It was found that there were vast numbers of persons with these conditions who might benefit from such an exercise program.
4) The numbers of nurses and physical therapists who are available to participate in these therapeutic exercise programs. It was found that in this area there was a very small number of physical therapists compared to the number of registered nurses actively employed in the New England States.

Definitions, terms used, and tool were accepted from MacDonald's study. She used eighteen nationally selected respondents--six physiatrists, eight physical therapists of whom four had nursing background, and four rehabilitation nurses. This study used twenty-nine respondents from the six New England States--four physiatrists, twelve physical therapists of whom six had nursing background, six rehabilitation nurses, four neurologists, and four orthopedists.

In both studies data were collected by mailed questionnaire. The questionnaire described specific exercise procedures and asked respondents to designate what responsibility they felt the registered nurse might assume for each of the exercises described.

The opinions of the sample were examined for answers to the following questions:

> For what kinds of exercise procedures may registered nurses assume responsibility?
>
> To what degree should they be responsible for each exercise?
>
> Should they have consultation?
>
> From whom should they have consultation?
>
> Should they have more skilled consultation on some types of exercises than on others?
>
> Should they be responsible for certain types of exercise procedures for all patients or for selected patients?

Answers from the two studies were then compared.

Conclusions

The following conclusions are modeled on MacDonald's scheme for summarizing her findings. On the basis of the studies, the following conclusions are believed to be justified regarding the role of the registered nurse in therapeutic exercise procedures.

1) The majority of respondents (50% or more) in both studies approve registered nurses assuming responsibility at least with selected patients for the following exercise procedures: active, active assistive, resistive, passive, passive stretch, active assistive stretch, and static or muscle setting.
2) For every exercise defined, 50% or more of each group of respondents in both studies approve registered nurses assuming responsibility at least with selected patients for
   a) Instruction and supervision with consultation from a physical therapist.
   b) Instruction and supervision with consultation from a physiatrist.
   c) Supervision of performance following establishment of exercise routine by a physical therapist except in active assistive stretch and passive stretch exercises.

d) Supervision of performance following establishment of exercise routine by a physiatrist.

3. The majority (50% or more) of each group of respondents in both studies agree that:

a) Consultative assistance is usually desirable for registered nurses who assume responsibility for instruction and supervision of patients in exercise programs.

b) Consultative assistance from physical therapists and physiatrists is the most approved type for registered nurses who assume responsibility for instruction and supervision of selected patients in exercise programs.

c) Registered nurses may instruct and supervise at least selected patients with consultation from a rehabilitation nurse for the following exercises: active, active assistive, resistive and passive and in this study, in addition, active assistive stretch and in MacDonald's study, in addition, passive stretch.

d) Registered nurses may assume more responsibility with "any" or with "selected" patients for the following exercises: active, passive, and static. In this study neurologists agreed to more responsibility to the nurses for static,

active assistive, and passive stretch exercises for "any" or "selected" patients. Rehabilitation nurses gave equal responsibility to the nurse for: active, active assistive, passive, and static exercises with "any" or with "selected" patients.

e) Registered nurses should assume least responsibility in exercise programs with "any" or "selected" patients for the following exercises: passive stretch, active assistive stretch, and resistive. The following are exceptions: Physiatrists think the nurse should assume the least responsibility for passive stretch, resistive, and active assistive exercises. Neurologists in this study checked only active and active assistive as the exercises for which there are at least 17% "no patient" selections.

Recommendations

On the basis of this study having been done as a replication of MacDonald's study the following recommendations are made:

1. That a replication of the study be done using a larger sampling of neurologists and orthopedists and adding general practitioners.
2. That schools of nursing attempt to determine types

of active, passive, and static exercises most often utilized to meet the rehabilitative needs of patients, and then incorporate instruction and supervised practice of these exercises into their curriculum.

3. That nursing administration make every effort to see that nurses are encouraged to seek written medical direction for exercise programs.
4. That nursing administration in hospitals and public health agencies explore channels by which consultative assistance may be made available to the nurse.
5. That nursing administration encourage nurses to participate in workshops and develop their own in-service programs in hospitals and public health agencies to instruct nurses in the techniques needed for an exercise program.
6. That hospital administration encourage the staff physician to write his exercise plans as specific orders.
7. That every effort be made by all persons in the nursing field to interpret the nurse's role and function as a member of the rehabilitation team.
8. That every effort be made by educators and practitioners in the fields of nursing and physical therapy to identify exercises which the nurse

needs to know and be able to perform for the welfare of the patients, and what her expected limitation should realistically be as to her degree of responsibility for therapeutic exercises.

BIBLIOGRAPHY

Books

Abdullah, Faye G., et al. Patient-Centered Approach to Nursing Care. New York: Macmillan Co., 1960.

Allgire, Mildred J., and Denney, Ruth R. Nurses Can Give and and Teach Rehabilitation. New York: Springer Publishing Co., 1960.

Bancroft, Frederick W. (ed.) and Murray, Clay R. (assoc. ed.) Surgical Treatment of the Motor-Skeletal System. Vol. II. Philadelphia and London: J. B. Lippincott Co., 1945.

Brown, Amy Frances. Medical and Surgical Nursing II. Philadelphia and London: W. B. Saunders Co., 1957.

Casagrande, Peter A., and Frost, Harold M. Jr. Fundamentals of Clinical Orthopedics. New York: Grune and Stratton Co., 1953.

Chronic Illness in a Rural Area: The Hunterdon Study. Reported by Ray E. Trussell and Jack Elinson. Vol. III: Chronic Illness in the United States. Cambridge: Harvard University Press, 1959.

Chronic Illness in a Large City: The Baltimore Study. Vol. IV: Chronic Illness in the United States. Cambridge: Harvard University Press, 1957.

Facts About Nursing. New York: The American Nurse's Association, 1961.

Facts on the Major Killing and Crippling Diseases in the United States, 1961. New York: The National Health Education Committee, Inc., 1961.

Felter, Robert K., West, Frances, and Zetzsche, Lydia M. Surgical Nursing. Philadelphia: F. A. Davis Co., 1952.

Ferguson, L. Kraeer and Sholtis, Lillian A. Eliason's Surgical Nursing. 11th ed. revised. Philadelphia and Montreal: J. B. Lippincott, 1959.

Gibbel, Melvin J. "Amputations of the Lower Extremity in Vascular Disorders," The Surgical Clinics of North America. XXXX (February, 1960). Philadelphia and London: W. B. Saunders Co.

Morrissey, Alice B. Rehabilitation Nursing. New York: G. B. Putnam's Sons, 1951.

Nicholson, Enrica. "Role of the Visiting Nurse for the Homebound Arthritic." Arthritis. Edited by Edward W. Lowman, Boston: Little Brown and Co., 1959.

Shafer, Kathleen N., et al. Medical-Surgical Nursing. St. Louis: The C. V. Mosby Co., 1958.

Solon, Jerry and Baney, Anna Mae. "Ownership and Size of Nursing Homes." Selected Articles on Nursing Homes. Washington, D.C.: U.S. Department of Health, Education, and Welfare, Public Health Service, 1960.

Terry, Florence J. Hemiplegia, Paraplegia, and Quadriplegia. Principles and Techniques of Rehabilitation Nursing. Edited by Deborah Jensen. St. Louis: The C. V. Mosby Co., 1957.

Travis, Georgia. Chronic Disease and Disability. Berkeley and Los Angeles: University of California Press, 1961.

West, John, Keller, Manelva Wylie, and Harmon, Elizabeth H. Nursing Care of the Surgical Patient. New York: The Macmillan Co., 1957.

Windemuth, Audrey. The Nurse and the Outpatient Department. New York: The Macmillan Co., 1957.

World Almanac 1962. Harry Hansen (ed.) New York: New York World-Telegram and Sun, 1962.

Pamphlets

Arthritis and Rheumatism Foundation, Medical and Scientific Committee. Home Care in Arthritis. New York: Arthritis and Rheumatism Foundation, 1958.

Blakeslee, Alton L. Arthritis--Its Treatment and Problems. 2nd ed. revised. Public Affairs Pamphlet No. 166. New York: Public Affairs Pamphlets, 1955.

Cerebral Vascular Disease and Strokes. Prepared by the Heart Information Center, National Heart Institute. Washington, D.C.: U.S. Government Printing Office, 1958.

Strike Back at Arthritis. Public Health Service Publication No. 747. Public Health Service. In collaboration with The Arthritis and Rheumatism Foundation. Washington, D.C.: U.S. Government Printing Office, 1960.

Periodicals

Cicenia, Erbert F., et al. "Functional Training of the Bilateral Above-Knee Amputee," American Journal of Physical Medicine, XXXVIII (February, 1959), 9-13.

Covalt, Nila Kirkpatrick. "Preventive Techniques of Rehabilitation for Hemiplegic Patients," Reprint from General Practitioner, XVII (March, 1958), 131-143.

Deaver, George G. "Rehabilitation," The American Journal of Nursing, LIX (September, 1959), 1278-1279.

Health Statistics. Series B. No. 9. U.S. Department of Health, Education, and Welfare. Washington, D.C.: U.S. Government Printing Office. (April, 1959), 9.

Health Statistics. Series C. No. 5. U.S. Department of Health, Education, and Welfare. Washington, D.C.: U.S. Government Printing Office. (March, 1961), 3, 4, 14.

Health Statistics. Series B. No. 28. U.S. Department of Health, Education, and Welfare. Washington, D.C.: U.S. Government Printing Office. (October, 1961), 2.

Higginbotham, Sarah. "Arm Exercises After Mastectomy," The American Journal of Nursing, LVII (December, 1957), 1573-1574.

Knocke, Lazelle. "Crutch Walking," The American Journal of Nursing, LXI (October, 1961), 70-73.

MacVicar, Jean. "Exercises Before and After Thorasic Surgery" The American Journal of Nursing, LXII (January, 1962), 61-63.

Mendelson, Janice A. "Sprains and Strains," The American Journal of Nursing, LXI (June, 1961), 45-50.

Ralston, Edgar L. "Legg-Calve-Perthes' Disease," The American Journal of Nursing, LXI (October, 1961), 88-91.

Skinner, Geraldine. "The Nurse--Key Figure in Preventative and Restorative Care," Journal of the American Hospital Association, XXXVI (January, 1961), 52-56.

Taylor, Winnefred E. "Rehabilitation," The American Journal of Nursing, LIX (September, 1959), 1280-1281.

Turner, Gwendolyn E. "The Cerebral Vascular Accident Patient," Nursing Outlook, VII, No. 6 (June, 1960), 325-330.

Warren, Richard. "Early Ambulation of the Artheriosclerotic Amputee," Surgery, XLI (February, 1957), 190-197.

Unpublished Material

Allen, Scott. "Community Attitudes and Action--A Dimension of Rehabilitation." Paper read before the conference, Newer Dimensions for Nursing in Rehabilitation, sponsored by the Office of Vocational Rehabilitation and Boston University, Boston, Mass., November, 1961. (Mimeographed).

Gill, Eleanor K. "A Study to Determine the Extent to Which Nurses Recognize and Believe That They Meet the Needs of the Radical Mastectomy Patients and the Extent to Which the Patients Think Their Needs Are Met." Unpublished Master's thesis, School of Nursing, Boston University, 1960.

Lawrence, Dorothea M. (Major, U.S.A.F.), "Variations in Therapeutic Exercise Terminology." Unpublished Master's thesis, Division of Physical Therapy, Department of Hygiene, Stanford University, 1954.

MacDonald, Mary M. "Expectations of Recognized Authorities Regarding Exercise Procedures for Which Registered Nurses May Assume Responsibility." Unpublished Master's thesis, School of Nursing, Boston University, 1961.

Nutter, Gail. "A Study to Determine the Awareness of a Group of Physical Therapy Students of the Role of the Professional Nurse and Auxiliary Nursing Personnel Who Are Members of the Rehabilitation Team." Unpublished Research Paper, Sargent College, Boston University, 1962.

Stillar, Edith M. "Range of Motion Exercises in Nursing Care." Unpublished Master's thesis, School of Nursing, Boston University, 1957.

Other Sources

American Physical Therapy Association. Personal interview with Helen Hillman, President, Massachusetts Chapter; David Harkins, President, Maine Chapter; Adelaide Berdeen, President, New Hampshire Chapter; Mary E. Du Bose, President, Rhode Island Chapter. May 15, 1962.

Arthritis and Rheumatism Foundation. Personal interview with Philip J. Doherty, Public Relations Director, Massachusetts Chapter, Arthritis and Rheumatism Foundation, Boston, Mass., May, 1962.

APPENDIX A

February 9, 1962

Mrs. Betty Erlandson
999 Commercial Street
Weymouth 89, Massachusetts

Dear Mrs. Erlandson:

Thank you for your letter of February 7, 1962, stating that you hope to do a replication of my field study.

You have my permission to use any questionnaires and definitions used in the study.

Good luck and best wishes for success in your undertaking. I shall be most interested in your conclusions and recommendations. May I hope to read the complete study at the proper time?

Sincerely,

Mary Macdonald
Rehabilitation Nursing
Consultant

MMac/jtf

APPENDIX B

Questionnaire

Working Definitions for Respondents

1. Physiatrist refers to a physician who is a member of the American Academy of Physical Medicine and Rehabilitation.

2. Physical therapist refers to a graduate of a school of physical therapy approved by the Council on Medical Education and Hospitals of the American Medical Association and an active member of the American Physical Therapy Association or the American Registry of Physical Therapists.

3. Registered nurse refers to a nurse who has satisfactorily completed at least a three-year course in a school of nursing approved by the National League for Nursing and who is registered as a professional nurse under the appropriate licensing authority in the state in which she practices.

4. Rehabilitation nurse refers to a nurse who holds a degree of Master of Science in Nursing with a Major in the clinical specialty of Rehabilitation Nursing.

5. Selected patient refers to a patient whose selection is based upon one or more of the following determinants: diagnosis, prognosis, degree of disability, amount of muscle spasm, degree and type of paralysis, or other pertinent factors. In the framework in which the term is used in this study the selection is to be made by the physiatrist or with the approval of the physiatrist by a physical therapist or a rehabilitation nurse.

6. Therapeutic exercise refers to any exercise prescribed by a physician but excludes the specialized techniques such as proprioceptive neuromuscular facilitation and the use of equilibratory reflexes.

7. Therapeutic Exercise Procedures:*

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* Dorothy M. Lawrence (Major, U.S.A.F.), "Variations in Therapeutic Exercise Terminology," (unpublished Master's thesis, Division of Physical Therapy, Department of Hygiene, School of Education, Stanford University, August, 1954), Section III.

a. Active Exercise -- Any exercise in which the contraction of the subject's muscles produces the motion entirely or in part.

or

Any exercise in which the contraction of the subject's muscles accomplishes the movement without the aid or opposition of an external force.

b. Active Assistive Exercise -- Exercise in which the force produced by the contraction of the subject's muscles is supplemented by some external force.

c. Resistive Exercise -- Exercise in which contraction of the subject's muscles is opposed by some external force.

d. Passive Exercise -- A movement within the free range of motion which is produced entirely by an external force without active contraction of the subject's muscles.

e. Passive Stretch -- A movement in which the subject's muscles or other soft tissues are elongated beyond their free range by the application of an external force without active contraction of the subject's muscles.

f. Active Assistive Stretch -- A movement in which the subject's muscles are elongated beyond their normal range by the contraction of the subject's own muscles supplemented by some external force.

g. Static or Muscle Setting Exercise -- Intermittent voluntary contraction and relaxation of muscles without joint motion.

8. External force refers to any force exerted manually or by any mechanical aid such as bed pulleys which may be part of the nursing unit.

9. Responsibilities of a registered nurse relative to the exercise techniques refers to the following:

a. Instruction and supervision -- This means that a registered nurse instructs the patient and family verbally and by demonstration and continues to supervise them in the exercise technique. In this situation she does not have consultative assistance.

b. Instruction and supervision with consultation -- This means that with consultative assistance (from a physiatrist, a physical therapist, a rehabilitation nurse) in the form of patient demonstrations, conferences, and written instructions a registered nurse instructs the patient and family verbally and by demonstration and continues to give them supervision in the exercise technique.

c. Supervision of patient's performance following:

1. initial instruction by physical therapist

This means that for the first treatment a physical therapist instructs the patient and family verbally and by demonstration after which a registered nurse assumes the responsibility for their continued supervision. In this situation a registered nurse does not have consultative assistance.

2. establishment of exercise routine by a physical therapist

This means that a physical therapist gives the patient and family sufficient instruction verbally and by demonstration so that they are competent in the performance of the exercise technique after which a registered nurse assumes responsibility for continued supervision. In this situation a registered nurse does not have consultative assistance.

d. Verbal reminders to carry out exercise routine.

This is self-explanatory.

INSTRUCTIONS

The following questionnaire is made up of seven sections. In each section you will find a type of therapeutic exercise procedure described. Underneath each description are four statements indicating degrees of responsibility which a registered nurse may assume for any patient under her nursing supervision for whom the specific procedure has been medically prescribed. Will you indicate with a check (✓) in the appropriate space provided whether in your opinion the designated statement of responsibility relative to the exercise procedure applies to "any patient," "a selected patient," or "no patient"? Please read all four statements first before checking each individual one.

It is assumed that any plan for treatment has appropriate medical and administrative approval.

1. Active Exercise: Any exercise in which the contraction of the subject's muscles produces the motion entirely or in part

or

Any exercise in which the contraction of the subject's muscles accomplishes the movement without the aid or opposition of any external force

Responsibility of a Registered Nurse Relative to This Exercise Technique	Check ONE OF THESE: ANY Patient	SELECTED Patients	NO Patient
a. Instruction and supervision	___	___	___
b. Instruction and supervision with consultation from			
(1) a physiatrist	___	___	___
(2) a physical therapist	___	___	___
(3) a rehabilitation nurse	___	___	___
c. Supervision of performance following:			
(1) initial instruction by a physical therapist	___	___	___
(2) establishment of exercise routine by a physical therapist	___	___	___
d. Verbal reminder to carry out exercise routine	___	___	___

2. Active Assistive Exercise: Exercise in which the force produced by the contraction of the subject's muscle is supplemented by some external force.

Responsibility of a Registered Nurse Relative to This Exercise Technique	Check ONE OF THESE: ANY Patient	SELECTED Patients	NO Patient
a. Instruction and supervision	___	___	___
b. Instruction and supervision with consultation from			
(1) a physiatrist	___	___	___
(2) a physical therapist	___	___	___
(3) a rehabilitation nurse	___	___	___
c. Supervision of performance following:			
(1) initial instruction by a physical therapist	___	___	___
(2) establishment of exercise routine by a physical therapist	___	___	___
d. Verbal reminder to carry out exercise routine	___	___	___

3. Resistive Exercise: Exercise in which contraction of the subject's muscle is opposed by some external force

Responsibility of a Registered Nurse Relative to This Exercise Technique	Check ONE OF THESE: ANY Patient	SELECTED Patients	NO Patient
a. Instruction and supervision	___	___	___
b. Instruction and supervision with consultation from			
(1) a physiatrist	___	___	___
(2) a physical therapist	___	___	___
(3) a rehabilitation nurse	___	___	___
c. Supervision of performance following:			
(1) initial instruction by a physical therapist	___	___	___
(2) establishment of exercise routine by a physical therapist	___	___	___
d. Verbal reminder to carry out exercise routine	___	___	___

4. **Passive Exercise:** A movement within the free range of motion which is produced entirely by an external force without active contraction of the subject's muscles.

Responsibilities of a Registered Nurse Relative to This Exercise Technique	Check ONE OF THESE: ANY Patient	SELECTED Patients	NO Patient
a. Instruction and supervision	___	___	___
b. Instruction and supervision with consultation from			
(1) a physiatrist	___	___	___
(2) a physical therapist	___	___	___
(3) a rehabilitation nurse	___	___	___
c. Supervision of performance following:			
(1) initial instruction by a physical therapist	___	___	___
(2) establishment of exercise routine by a physical therapist	___	___	___
d. Verbal reminder to carry out exercise routine	___	___	___

5. Passive Stretch: A movement in which the subject's muscles or other soft tissues are elongated beyond their free range by the application of an external force without active contraction of the subject's muscles.

Responsibility of a Registered Nurse Relative to This Exercise Technique	Check ONE OF THESE: ANY Patient	SELECTED Patients	NO Patient
a. Instruction and supervision	___	___	___
b. Instruction and supervision with consultation from			
(1) a physiatrist	___	___	___
(2) a physical therapist	___	___	___
(3) a rehabilitation nurse	___	___	___
c. Supervision of performance following:			
(1) initial instruction by a physical therapist	___	___	___
(2) establishment of exercise routine by a physical therapist	___	___	___
d. Verbal reminder to carry out exercise routine	___	___	___

6. Active Assistive Stretch: A movement in which the subject's muscles are elongated beyond their normal range by the contraction of the subject's own muscles supplemented by some external force.

Responsibility of a Registered Nurse Relative to This Exercise Technique	Check ONE OF THESE: ANY Patient	SELECTED Patients	NO Patient
a. Instruction and supervision	___	___	___
b. Instruction and supervision with consultation from			
(1) a physiatrist	___	___	___
(2) a physical therapist	___	___	___
(3) a rehabilitation nurse	___	___	___
c. Supervision of performance following:			
(1) initial instruction by a physical therapist	___	___	___
(2) establishment of exercise routine by a physical therapist	___	___	___
d. Verbal reminder to carry out exercise routine	___	___	___

7. Static or Muscle Setting Exercise: Intermittent voluntary contraction and relaxation of muscles without joint motion

Responsibilities of a Registered Nurse Relative to This Exercise Technique	Check ONE OF THESE: ANY Patient	SELECTED Patients	NO Patient
a. Instruction and supervision	___	___	___
b. Instruction and supervision with consultation from			
(1) a physiatrist	___	___	___
(2) a physical therapist	___	___	___
(3) a rehabilitation nurse	___	___	___
c. Supervision of performance following:			
(1) initial instruction by a physical therapist	___	___	___
(2) establishment of exercise routine by a physical therapist	___	___	___
d. Verbal reminder to carry out exercise routine	___	___	___

RELEVANT DATA IN PROFESSIONAL WORK EXPERIENCE OF RESPONDENTS

1. How long have you been active in

orthopedics?	_____ Under One Year
neurology?	_____ One to Five Years
physical medicine?	_____ Six to Ten Years
rehabilitation nursing?	_____ Over Ten Years
physical therapy? nurse non-nurse	

2. Does the registered nurse staff in your facility assume any responsibility for any exercise procedure? ___Yes ___No

   If yes, what type of exercise and what degree of responsibility?

3. Have you taught any exercise procedures within the past year to a registered nurse? ___Yes ___No

4. Have you ever actively encouraged registered nurses to participate in exercise programs? ___Yes ___No

   Please Comment

5. May your name and official title be listed along with other respondents in an appendix to the study? ___Yes ___No

Name_____

Official Title of Present Position: _____