9-1965

The Relationship of Instructions During Labor and Relaxation

Frances Josephine Hume Lopez

LOMA LINDA UNIVERSITY

Graduate School

THE RELATIONSHIP OF INSTRUCTIONS DURING LABOR AND RELAXATION

By

Frances Josephine Hume Lopez

A Thesis in Partial Fulfillment

of the Requirements for the Degree

Master of Science in the Field of Nursing

September, 1965

Each person whose signature appears below certifies that he has read this thesis and that in his opinion it is adequate, in scope and quality, as a thesis for the degree of Master of Science.

Clarice Woodward, Chairman
Clarice Woodward, M.S., Assistant Professor of Nursing

Winifred M. Edwards
Winifred M. Edwards, M.A., Associate Professor of Nursing

Sadie B. Sinclair
Sadie Sinclair, M.S., Assistant Professor of Physical Therapy

ACKNOWLEDGEMENTS

The author wishes to thank Mrs. Clarice Woodward, Mrs. Winifred Edwards and Dr. Betty Stirling for patient guidance in the preparation of this thesis; to express sincere appreciation to Mrs. Marge Bagnor for permission to do the study and to Mrs. Mary Hyatt and her staff for cooperation and assistance in conducting the study; and to gratefully acknowledge the financial assistance of the Public Health Service of the United States Department of Health, Education and Welfare, which provision made this study possible.

Frances H. Lopez

TABLE OF CONTENTS

CHAPTER PAGE

CHAPTER PAGE

CHAPTER I

INTRODUCTION

Techniques of natural childbirth were initiated in 1933 by the British obstetrician, the late Grantly Dick Read.[1] Read's techniques were based on the theory that when fear is overcome, tensions may be eliminated and pain relieved. He believed that relaxation should be employed as an antidote to tension.[2] Read, and others who have followed him,[3] believe that the mother who has been prepared for natural childbirth by receiving instructions in breathing techniques and appropriate body positions will, with coaching from her husband or her nurse, generally be able to accomplish conscious relaxation and hence relative freedom from pain.[4]

While several studies[5] have been made on the effects of childbirth

---

[1]Grantly Dick Read, Natural Childbirth, London: Heinemann, 1933.

[2]_____, Childbirth Without Fear, New York: Harper and Brothers Publishers, 1944, p. 167.

[3]Helen Heardman, A Way To Natural Childbirth, Baltimore: The Williams and Wilkins Company, 1949; Herbert Thoms, Training for Childbirth, New York: McGraw-Hill Book Company, 1950; Frederick W. Goodrich, Natural Childbirth, New York: Prentice-Hall, Inc., 1950.

[4]Elise Fitzpatrick and Nicholson J. Eastman, Zabriskie's Obstetrics For Nurses, Philadelphia: J. B. Lippincott Company, 1960, p. 174.

[5]Frederick W. Goodrich and Herbert Thoms, "A Clinical Study of Natural Childbirth," American Journal of Obstetrics and Gynecology, 56: 875-883, November, 1948; Herbert Thoms and R. H. Wyatt, "One Thousand Consecutive Deliveries Under a Training For Childbirth Program," American Journal of Obstetrics and Gynecology, 61:205-209, January, 1951; William Van Auken and David Tomlinson, "An Appraisal of Patient Training for Childbirth," American Journal of Obstetrics and Gynecology, 66:100-105, July, 1953; Herbert Thoms and E. D. Karlovsky, "Two Thousand Deliveries Under Training for Childbirth Program: Statistical Survey and Commentary," American Journal of Obstetrics and Gynecology, 68:279-284, July, 1954; Briht Bergstrom-Walen, "Efficacy of Education For Childbirth," Journal of Psychosomatic Research, 7:131-146, October, 1963.

training programs, this researcher could find no studies on the "unprepared" patient. This study was done to determine if or to what degree the patient may be able to accomplish conscious relaxation if given instructions in breathing techniques and body positions during labor.

I. NEED FOR THE STUDY

There are several reasons why the hospital obstetrical nurse should be concerned with the management of the labor patient. Ninety-seven per cent of all births in the United States in 1962 occurred in hospitals or institutions.[6] Hence nearly all labor patients are under the care and/or supervision of the hospital nurse.

Secondly, in spite of the large proportion of hospital deliveries, an estimated one hundred thousand American women each year never see a doctor during pregnancy.[7] Statistics from many clinics throughout the United States show that almost fifty per cent of pregnant women do not have prenatal care.[8] Therefore, a large number of patients entering the hospital for delivery have not had education, training, or psychological conditioning for childbirth which might be available to them through regular contacts with a doctor.

---

[6]U. S. Bureau of the Census, Statistical Abstract of the United States: 1964, Eighty-fifth edition, Washington, D. C., Government Printing Office, 1964, p. 51.

[7]Louis Hellman and Frances O'Brien, "Nurse-Midwifery An Experiment in Maternity Care.", Obstetrics and Gynecology, 24:343, September, 1964.

[8]"Meeting the Childbearing Needs of Families in a Changing World," Report of a Work Conference sponsored by Maternity Center Association, New York, 1962, p. 10; Robert A. Johnson and others, "Is Prenatal Care Beneficial or Necessary?" Southern Medical Journal, 57:399, 1964.

Finally, the present day emphasis on preparing women for childbirth and giving them individual support and attention during labor has its roots deep in the kind of obstetrical care that a woman received when delivery was carried out at home, where her relations to her baby, her family, and her surroundings were familiar.[9] Thoms states that "the implications for such concern (support during labor) go beyond the safeguarding of the hazards of childbirth and that they extend far into the culture of a civilization."[10] There are few experiences where a nurse has so much to offer as she has when she is privileged to stay with a patient in labor.[11]

II. THE PROBLEM

Statement of the Problem

The problem of this study was to determine if it is possible to instruct and assist the "unprepared" mother in breathing and body positions during active labor so that she might be able to accomplish conscious relaxation.

Purpose of the Study

The purpose of this study was to compare two groups of "unprepared" primigravida patients in active labor and to determine if the group which had continuous nurse attendance plus instructions to aid in relaxation

---

[9]Herbert Thoms and William C. Billings, "A Consideration of Childbirth Programs," The New England Journal of Medicine, 255:860, Nov. 1956.

[10]Herbert Thoms, Childbirth With Understanding, Springfield, Illinois, Charles C. Thomas, Publisher, 1962, p. 16.

[11]M. E. Davis and C. E. Sheckler, DeLee's Obstetrics For Nurses, ed. 16, Philadelphia: W. B. Saunders Co., 1957, p. 201.

by (1) breathing techniques and (2) body positions during the first and second stages of labor would show less evidence of pain, fear, and tension than the group which received only the continuous nurse attendance.

Hypothesis

It is the hypothesis of this study that the "unprepared" primigravida patient who, during the first and second stages of labor, has continuous attendance by the research nurse plus instructions to aid in relaxation by (1) breathing techniques, and (2) body positions will display less evidences of fear, tension, and pain as expressed by the patient and as observed by the nurse than the "unprepared" primigravida patient who has received only continuous nurse attendance.

Assumptions

For the purpose of this study it was assumed that:

1. The best way to conduct this study was for the research nurse to give continuous attendance and to aid the patient in relaxation by instruction in breathing and body positions during the first and second stages of labor.

2. The research nurse was able to give continuous attendance to a labor patient as well as to teach and evaluate the conduct of the patient during labor.

3. Continuous nurse attendance and instructions on how to breathe, and change body positions would not be deleterious to the mother or infant.

4. The patient would give an opinion which would evaluate her feelings about the pain experience.

Scope of the Study

Twenty English-speaking "unprepared" primigravida patients were selected in a 493-bed general service county hospital in southern California. All were in active labor when the continuous attendance by the research nurse was started. None had received previous formal classroom instruction in breathing and relaxation as preparation for childbirth.[12] Patients were between the ages of sixteen and thirty years of age, and included both married and single women. All races were eligible to be included. Only patients with the fetus in a vertex presentation were included.

Patients were excluded if they had a diagnosis of a nervous system disease, a mental illness, toxemia of pregnancy, diabetes, heart disease, cephalopelvic disproportion, multiple pregnancy, or excessive bleeding of pregnancy.

Hospital personnel were instructed to notify the research nurse when the patient had two to three centimeters of cervical dilatation. They were instructed not to notify the research nurse if the patient on admission had eight or more centimeters of cervical dilatation.

Limitations

The research nurse limited her continuous attendance and instructions to not more than two patients at any one time and then only if the patients were in the same room in adjacent beds. She limited her continuous attendance with each patient to not less than two hours nor more than fourteen hours.

---

[12]The researcher recognized the fact that the patients may have gained information outside of a classroom situation.

III. DEFINITION OF TERMS

For the purpose of this study, the following terms are defined:

Continuous nurse attendance. Attendance by the research nurse without interruptions of more than fifteen minutes at any one time. (Details of nursing care may be found in Chapter III).

"Unprepared" patient. A pregnant woman who has not received formal organized instruction in breathing, exercises and relaxation techniques in a class specifically designed for the purpose of education and preparation for childbirth.

Period of active labor. A period of time between the regular and painful contractions of the uterus as observed by the patient, and the end of the second stage.

IV. METHODOLOGY OF STUDY

Literature dealing with pain during childbirth, physiology of labor, breathing exercises, relaxation techniques, and body positions during labor was reviewed to gain information, to validate the need for the study, and to aid in the construction of the design for the study.

Breathing exercises and body positions to aid relaxation were selected as items to be used for instruction. Criteria for evaluating the conduct of the patient during labor and the questionnaire to evaluate the patient's perception of pain and experience were taken from other studies and adapted for use in this study.

Permission to do the study was obtained from the Director of Nursing Service in the selected hospital. A pilot study of fourteen patients was done to identify problems likely to arise from such a study and point out necessary changes to be made before the study.

A causal-comparative study was conducted using the experimental method. The parallel-group technique was used to control the conditions of the experimental group while the control group underwent non-experimental conditions for comparative reasons.

Tools used to collect the data consisted of (1) a structured observation by the research nurse and (2) a questionnaire with "fixed-alternative" questions completed by the patient. A non-probability sampling of purposive samples was used for the study. Subjects in the two groups were paired by age, race and marital status.

Data was then collected between May 2, 1965 and July 5, 1965 and analyzed. Conclusions and recommendations were made.

V. SUMMARY

The problem of this study was to determine if it is possible to instruct and assist the "unprepared" mother in breathing and body positions during active labor so that she might be able to accomplish conscious relaxation. A solution to this problem was sought through the comparison of two groups of "unprepared" primigravida patients in active labor to determine if the group which had continuous nurse attendance plus the instructions to aid relaxation by (1) breathing techniques and (2) body positions would show less evidences of pain, fear and tension than the group which received only the continuous nurse attendance.

The experimental method was used. Tools consisted of (1) a structured observation, and (2) a questionnaire.

Subjects were hospitalized patients on the maternity unit of a county hospital in southern California.

CHAPTER II

REVIEW OF LITERATURE

I. INTRODUCTION

In our culture, labor pain during childbirth is expected but not accepted; therefore, various methods and means are used to alleviate it.[1] A review of literature was done to study the physiological aspects of pain during childbirth. Certain specific methods of alleviating pain were investigated. These methods included exercises in breathing, teaching proper body positions, and encouraging relaxation.

II. THE NATURE OF PAIN

Definition of pain

Pain is not easily defined because it is subjectively experienced and interpreted in terms of the meaning which it has for the individual.[2] From a medical viewpoint, pain can be considered as a complex psychophysiological response to noxious stimulation.[3] Pain is a response to a stimulus which is transmitted from a sensitive end-organ by way of afferent nerve fibers to centers in the brain, which associate it with a site of origin.[4]

---

[1]Mark Zborowski, "Cultural Components in Responses to Pain," Journal of Social Issues, 8:18, April, 1962.

[2]Charles Aring, "The Nature and Significance of Chronic Pain," The Medical Clinics of North America, 42:1469, November, 1958.

[3]Harold G. Wolff and Stewart Wolf, Pain, 2nd. ed., Springfield, Illinois, Charles C. Thomas, 1958, p. 5.

[4]Theodore Ruch and John Fulton, (eds.), Medical Physiology and Biophysics, 18th. ed., Philadelphia: W. B. Saunders Co., 1960, pp. 317-318.

Transmission of Pain Impulses in the Nervous System

Guyton, a physiologist, explains the transmission of pain impulses thusly:

> In the spinal cord, pain is transmitted either entirely or almost entirely in the lateral portion of the spinothalamic tract. Pain fibers enter the cord through the dorsal roots, ascend 1 to 6 segments in the tract of Lissauer and then end on second order neurons in the posterior horns of the cord gray matter. These neurons give rise to fibers that immediately cross in the anterior commissure of the cord and pass upward in the lateral spinothalamic tract to end in the ventrobasal complex and adjacent regions of the thalmus. Third order neurons in the thalmus transmit impulses to the cerebral cortex.[5]

Purpose of Pain

Pain is a protective mechanism for the body, for it occurs whenever any tissues are being damaged, and it causes the individual to react reflexly to remove the pain stimulus.[6] The reflex pattern of response to deep somatic or visceral pain, which is present in childbirth, is characterized by depression of vital functions, nausea and vomiting.[7]

Reaction of Pain

Even though the threshold for recognition of pain remains approximately equal from one person to another, the degree to which each one reacts to pain varies tremendously.[8] From the physiological point of

---

[5]Arthur Guyton, Textbook of Medical Physiology, Philadelphia: W. B. Saunders Company, 1961, p. 659.

[6]Guyton, op. cit., p. 656.

[7]Wolff and Wolf, op. cit., p. 23.

[8]Ibid., p. 657.

view, pain qualifies as a sensation of importance to the self preservation of the individual.[9]

Uterine Pain

Both parietal and visceral afferent pain may be transmitted from the uterus.[10] Visceral pain may be caused by chemical stimuli such as acids, ischemia, distention of a hollow viscus, spasm of a hollow viscus, and stretching of the ligaments. The parietal peritoneum of the abdomen is unlike the viscus in its response to pain. Crushing, tearing, cutting, burning, or damaging of the parietal peritoneum initiates extreme burning and pricking pain exactly like the sensations from the surface of the body.[11]

Labor Pains

Pain in early labor is probably caused mainly by anoxia of the uterine muscle resulting from compression of the blood vessels to the uterus.[12] The intensity of pain in the first stage of labor is roughly proportional to the extent of the cervical dilatation and inversely proportional to the duration of the interval between uterine contractions.[13] During the second stage of labor, when the fetus is being expelled through

---

[9]James D. Hardy, Harold G. Wolff and Helen Goodell, Pain Sensations and Reactions, Baltimore: Williams and Wilkins Company, 1952, p. 23.

[10]Guyton, op. cit., p. 665.

[11]Ibid., p. 661.

[12]Ibid., p. 1111.

[13]Carl Javert, "Measurement of Pain Intensity in Labor and Its Physiological, Neurologic, and Pharmalogic Implications," American Journal of Obstetrics and Gynecology, 60:552-553, September, 1950.

the birth canal, even more severe pain can be caused by cervical stretch, compression of neurons in the cervix, peritoneal stretch, and tearing of structures in the vaginal canal. This pain is conducted by somatic nerves.[14]

Psycho-physiologic Reactions to Pain

The psychosomatic interdependence of the psychologic and physiologic processes is nowhere so clearly demonstrated as in the female reproductive activity.[15] Bonica explains the psycho-physiologic reactions to pain in the following manner:

> Pain is a sensation which is dependent on the consciousness of the individual. The highest integrative centers participate in its interpretation. In addition to the common origin through noxious stimulus acting on peripheral nerve endings, it may originate through the activity of the emotional and intellectual functions of the thalmus and cerebral cortex, as in pain of the thalamic syndrome or in psychogenic pain.[16]

Emotional reactions during labor are an important part of the childbirth experience.[17] The emotional intensity of childbearing may be such that there is a dissociation of pain. Pain which might ordinarily occur for some individuals may not be appreciated or experienced.[18]

---

[14]Guyton, loc. cit.

[15]Helen Deutsch, The Psychology of Women, Volume II, New York: Grune and Stratton, Inc., 1945, p. 224.

[16]John J. Bonica, The Management of Pain, Philadelphia: Lea and Febiger, 1953, p. 152.

[17]Fred Kartchner, "A Study of the Emotional Reactions During Labor," American Journal of Obstetrics and Gynecology, 60:23, July, 1950.

[18]Bonica, op. cit., p. 151.

III. PHYSIOLOGY OF MUSCULAR CONTRACTIONS

Skeletal Muscle Fiber

All skeletal muscles of the body are made up of numerous muscle fibers. Each muscle fiber contains several hundred to several thousand myofibrils. Each myofibril has, lying side by side, about 2500 myosin and actin-tropomyosis filaments which are large polymerized protein molecules that are responsible for muscle contractions.[19] The myofibrils are enmeshed in a semi-fluid matrix called sarcoplasm, which makes up perhaps 50 per cent of the entire muscle fiber and contains large numbers of mitochondria for supporting oxidation metabolism in the muscle fiber.[20]

Smooth Muscle Fiber

Smooth muscle fibers may be of two types--syncytial fibers and discrete fibers. The syncytial fibers are characteristically found in the hollow organs of the body. The contractile process in smooth muscle is believed to be the same as that in skeletal muscle, and smooth muscle fibers contain myofibrils composed of myosin and actin-tropomyosin. There is a greater abundance of sarcoplasm in smooth muscle fibers than in skeletal muscle fibers. Because of these differences in structure, smooth muscle contraction is slow and prolonged.[21]

Chemistry of Muscular Contractions

The source of the energy for contraction is adenosine triphosphate

---

[19]Guyton, op. cit., p. 244.

[20]Ibid., p. 245.

[21]Ibid., p. 255.

myosin, which when activated with calcium ions, becomes a strong enzyme called adenosine triphosphate and releases large quantities of energy.[22] A second energy-rich substance, phosphocreatine is also found in muscle fluids. It can break down into creatine and free phosphate yielding energy for the re-synthesis of adenosine triphosphate. The digestion of carbohydrate foodstuffs results in a simple sugar-like chemical transformation and becomes glycogen as it enters either of its principal storehouses, the liver and the muscles. In the muscles glycogen can undergo chemical breakdown to produce lactic acid. Lactic acid is a virtual poison in the muscular metabolism. If it accumulates to more than a few tenths of one per cent, muscle pain occurs and contraction ceases. This is what happens under anaerobic conditions. In aerobic conditions the lactic acid is oxidized to produce water and carbon dioxide, which are in turn excreted through the lungs.[23]

Muscle Action During Childbirth

There are three layers of muscles in the uterine wall. The outer layer consists of longitudinal fibers which spread up and over the front of the uterus and down the back or posterior wall. The middle layer is composed of fibers which run in all directions and entwine in "figure of eight" formation. The inner layer consists of fibers which pass around the lower half of the uterus and near the neck or outlet.[24]

---

[22]Guyton, op. cit., p. 246.

[23]Philip J. Rasch, Roger K. Burke, Kinesiology and Applied Anatomy, Philadelphia: Lea and Febiger, 1959, p. 69.

[24]J. P. Greenhill, Obstetrics, Philadelphia: W. B. Saunders Co., 1960, p. 73.

Contractions of these muscles depend upon three sources of nervous impulse to the uterus. The circular fibers are supplied by the sympathetic nervous system. The longitudinal fibers have two sources of nerve supply: one from the parasympathetic group, and the other a local innervation from ganglia within the muscle of the uterus itself which is not associated with the spinal cord or the sympathetic nervous system.[25]

At the termination of pregnancy the uterus becomes progressively more excitable until finally it begins very strong rhythmical contractions with such force that the baby is expelled. The exact cause of the increased activity is not known but at least two major categories of effects lead up to the culminating contractions responsible for parturition. The first of these is the hormonal change that causes increased excitability of the uterine musculature, the second is the progressive mechanical change that leads to parturition.[26]

As the muscles contract during labor, there is a reciprocal action between the longitudinal muscle of the uterus and the circular fibers of the cervix. This action is aided by the round ligaments. During a uterine contraction the round ligaments serve to pull the uterus anteriorly, causing it to stand up, thus its long axis is brought more nearly at right angles to the plane of the pelvic outlet. If the abdominal wall can expand easily during contractions, the uterus tips forward more efficiently.[27]

---

[25] Ibid., p. 75.

[26] Guyton, op. cit., p. 1108.

[27] Mabel L. Fitzhugh and Michael Newton, "Muscle Action During Childbirth," The Physical Therapy Review, 36:805, December, 1956.

When a woman goes into labor for the first time she will experience new sensations. For the woman uninformed about childbirth, these new sensations may be interpreted as pain. Should that be so, the thalamus, in conjunction with the cortex, immediately sets up a protective mechanism. The sympathetic nervous system, when protection is called for by the thalamus, overrides all other nerve stimuli throughout the body. The circular fibers which inhibit the opening of the uterine outlet are innervated by the sympathetic nervous system. The circular fibers should be relaxed when the longitudinal fibers of the upper segment exert their detrusor action. The local innervation from ganglia within the muscle of the uterus enables the longitudinal fibers to continue to contract even though the autonomic supply has been cut out by the sympathetic over-stimulation. The outlet of the uterus, instead of being lax, is made tense, and the contractions of expulsion by the long fibers are opposed by muscles resisting their efforts.[28]

IV. RELAXATION

> Nothing has been more remarkable in the practice of obstetrics within the last ten years than the increasing appreciation of the value of principles enunciated by Edmund Jacobson in 1929 in his book Progressive Relaxation and afterwards applied to midwifery by Grantly Dick Read in his two books Natural Childbirth and Revelations of Childbirth.---F. J. Browne[29]

Jacobson, a physiologist and physiotherapist, tells of a technical

---

[28]Read, Grantly Dick, Childbirth Without Fear, New York: Harper and Brothers Publishers, 1944, p. 17.

[29]F. J. Browne, Foreward in H. Heardman's, A Way to Natural Childbirth, Baltimore: The Williams and Wilkins Company, 1948, p. vi.

relaxation based on the application of the principles of physics, chemistry, and mathematics:

> There is every reason to assume that the pregnant woman can be trained for labor by strictly physiological methods. It is unnecessary (a) to stimulate enthusiasm, (b) to cultivate faith or suggested states, and (c) to educate her in the mechanics of childbirth.[30]

Read, writing of the principle of relaxation, declared: "Consider relaxation to be conditions in which the muscle tone throughout the body is reduced to a minimum."[31] The physiological reactions and the reflexes are definitely commensurate in their intensity to the muscle tone of the body. The proprio-ceptor influences are much less pronounced in a state of muscular relaxation than in a state of tension.[32] Read applied these theories to the practice of obstetrics leading to physiological labor or natural childbirth.

Heardman, a British physiotherapist, used Jacobson's principles in her teaching in the antenatal clinics and labor wards.[33] She followed the three principles of relaxation: (1) full support of the body so that the muscles do not have to work, (2) flexion of the joints so that the muscles are not drawn taut across a joint, and (3) mental peace, by giving some positive thoughts to the mind. She further believed that natural breathing rhythm serves as a mental release and hence aids in relaxation.[34]

---

[30]Edmund Jacobson, "Relaxation Methods in Labor," American Journal of Obstetrics and Gynecology, 67:1047, May 1954.

[31]Read, op. cit., p. 167.

[32]Ibid., p. 167.

[33]Goodrich, op. cit. p. xi.

[34]Heardman, op. cit., p. 13.

Goodrich and Thoms conducted a study in 1948 to evaluate the principles of natural childbirth as proposed by Read. They concluded that the supporting structures of the programs are the relaxation techniques, and perhaps more important in the management of the labor, is keeping the patient informed of her progress and not left alone to develop fear and anxiety.[35]

Tupper concludes from his study that the patient will not mind the next contraction if she is able to relax physically and mentally between the contractions. He doubts that any woman can relax physically to any great extent while the uterus is contracting.[36]

V. BREATHING FOR RELAXATION

Normal chest breathing is shallow and rapid. Breathing for relaxation is slow, deep, and rhythmical.[37] In relaxed breathing, the inspiration and expiration should be without tension; there should be no restraint in expiration. Breathing during complete relaxation is perfectly smooth, and in many cases, inaudible.[38]

The body is completely relaxed when the entire muscular system is loose and slack and the breath is deep in the lower lungs.[39] The breathing is from the lower lungs, reaching to the diaphragm, rather than solely

---

[35]Goodrich and Thoms, op. cit., p. 880.

[36]Carl Tupper, "Conditioning For Childbirth," American Journal of Obstetrics and Gynecology, 71:735, April, 1956.

[37]M. H. Soglow, Relax Your Way to Health, Englewood Cliffs, N. J. Prentice-Hall, Inc., 1958, p. 31.

[38]Read, op. cit., p. 178.

[39]William H. Miller, Relax and Enjoy Life, New York: A. S. Barnes and Company, 1944, p. 17.

from the chest.[40] As the diaphragm contracts, it moves downward shortening the abdominal cavity and enlarging the thoracic cavity. As the diaphragm moves up again and the air is pushed out of the lungs, relaxation occurs. This type of breathing is called abdominal or diaphragmatic breathing, and is an important part of preparation for childbirth.[41]

The primary purpose of breathing techniques is to help reduce subconscious hyperexcitability which affects the whole nervous system of a woman in labor. Deep, slow breathing achieves this goal and is productive of good oxygenation.[42]

During the transition stage voluntary expansion of the abdomen may become difficult or impossible. In that case sternal respirations may be encouraged. The woman breathes with her lower ribs, expanding them laterally and exhaling completely with each breath. The most effective expulsive efforts can be made if the patient takes a deep breath and holds it while she bears down.[43]

Hyperventilation occurs spontaneously in many women during labor.[44] The practice of teaching mothers to pant rapidly and shallowly in the later stages of labor has unpleasant physiological effects according to a

---

[40] Ibid., p. 3.

[41] Goodrich, op. cit., p. 68.

[42] R. St. J. Buxton, "Breathing in Labor," News Letter, The Obstetric Association of Chartered Physiotherapists, (Brit.), September, 1963.

[43] Fitzhugh and Newton, op. cit., p. 807.

[44] F. Moya, et al., "Influence of Maternal Hyperventilation on the Newborn Infant," American Journal Obstetrics and Gynecology, 91:76, January 1, 1965.

study by Buxton. It produces tetany, which follows from the alkalotic state left by the loss of carbon dioxide. The tetany is shown by increased excitability of motor nerves. Muscle spasm occurs and can be quite painful.[45]

VI. BODY POSITIONS FOR RELAXATION

For some women relaxation is most easily achieved when lying down. Relaxation and abdominal breathing are easiest when all the joints are partially flexed. If the woman lies on her back, the bed should be broken at the knees as well as at the hips. If the woman lies supine on a level bed her abdominal wall is taut and relaxation and abdominal expansion may be difficult.[46]

No muscles should have to work to hold any part of the body in position. The advantages of the lateral position are (1) comfort for the patient, and (2) the release of pressure of the pregnant uterus on the vena cava.[47] When the patient is on her side, the baby's weight should be resting on the bed. The legs are flexed with one knee resting over the other.[48]

During the second stage the patient may be placed in a modified squatting position. The presenting part of the baby should enter the pelvis at right angles to the plane of the inlet, and should be parallel

---

[45]Buxton, loc. cit.

[46]Fitzhugh and Newton, op. cit., p. 806.

[47]Thaddeus Montgomery, "Physiological Considerations in Labor and the Puerperium," American Journal of Obstetrics and Gynecology, 76:708, October, 1958.

[48]Davis and Sheckler, op. cit., p. 195.

to the long axis of the uterus. If the mother's spine can be curved from her occiput to her coccyx, the force of the muscles of expulsion can be used more effectively.[49]

Greater efficiency and control of expulsive efforts can be obtained if the knees are raised and held by the woman. The legs are widely separated and she places her hands over the knees or in the popliteal spaces. The feet are raised off of the bed to allow the body weight to rest on the lower back instead of the feet.[50]

VII. SUMMARY

This chapter contains a review of the medical literature of the physiological aspects of pain and specific methods of alleviating pain, including especially breathing techniques and body positions to aid relaxation.

The nature and purpose of pain, pain impulses and reactions are defined and illustrated. Specific mention is made of uterine pain and labor pains as well as the psycho-physiologic implications of pain during childbirth. Differences between skeletal muscle fiber and smooth muscle fiber are reviewed as is the chemistry of muscular contraction.

---

[49] Fitzhugh and Newton, op. cit., p. 808.

[50] Grantly Dick Read, "An Outline of the Conduct of Physiological Labor," American Journal of Obstetrics and Gynecology, 54:706, October, 1947.

CHAPTER III

METHODOLOGY

I. METHOD OF INVESTIGATION

The problem of this study was to determine if it is possible to instruct the "unprepared" mother in breathing and body positions so that she may be able to accomplish relaxation during labor. A causal comparative study was done using two small groups of "unprepared" primigravida patients in active labor to determine if the group which had continuous nurse attendance plus instructions to aid relaxation by (1) breathing techniques and (2) body positions would show less evidences of pain, fear, and tension than the group which received only continuous nurse attendance. This chapter presents the method of study and describes the techniques used in collecting data.

A hypothesis of causal relationship asserts that a particular characteristic or occurrence (X) is one of the factors that determine another characteristic or occurrence (Y).[1] Under conditions controlled as carefully as possible, only a single factor or variable was manipulated or changed; the experimental factor was varied for one group, while the parallel group served as the control for comparative purposes, undergoing customary (usual) or non-experimental conditions.[2]

---

[1]Claire Sellitz, et al., Research Methods in Social Relations, New York: Holt, Rinehart and Winston, 1959, p. 80.

[2]Carter V. Good and Douglas E. Scates, Methods of Research, New York: Appleton-Century-Crofts, Inc., 1954, p. 705.

A non-probability sampling of purposive samples was used to select the subjects for the study. In non-probability sampling, there is no way of estimating the probability that each element has of being included in the sample, and no assurance that every element has some chance of being included.[3] The basic assumption behind purposive samples is that, with good judgment and with an appropriate strategy, one can hand pick the cases to be included in the sample and thus develop samples that are satisfactory in relation to one's needs.[4]

In human experimentation, the most difficult problems involve the equating of groups, control of variable factors, and assessing (measuring) of outcomes. Pairing of subjects in the parallel groups is a refined technique that is more reliable than depending solely on the comparison of the averages and variabilities of the groups considered as a whole.[5] The subjects in this study were paired by age, race, and marital status.

In the "after-only" experiment, the experimental and the control groups are observed or measured with respect to the dependent variable (Y) only during or after the exposure of the experimental group to the assumed causal variable (X).[6] In this study the causal variable was the instruction of breathing, and body positions to aid relaxation by the research nurse. The dependent variable was the evidence of pain, fear and tension as expressed by the patient and observed and rated by the nurse.

---

[3]Sellitz, et al., op. cit., p. 514.

[4]Ibid., p. 520.

[5]Good and Scates, op. cit., p. 708.

[6]Sellitz, et al., op. cit., p. 108.

Tools used to collect the data included the structured observation by the research nurse and a questionnaire with "fixed-alternative" questions completed by the patient. Observation is the most direct means of studying subjects when the interviewer is interested in their overt behavior.[7] A "fixed-alternative" question is one in which the responses of the subject are limited to stated alternatives.[8]

II. CONTROL OF VARIABLES

The experimental group received continuous nurse attendance plus the instructions in breathing and body positions while the control group received only continuous nurse attendance.

Activities Included In Continuous Nurse Attendance for the Experimental and Control Groups

Upon receiving a call from the hospital, the research nurse went directly to the maternity unit. The subject was evaluated to see if she met the specifications to be included in the study. The nurse then identified the patient by name and introduced herself. The patient was not told that she was participating in a study. In most cases, the patient asked the nurse for further identification. The nurse told the patient she was a registered nurse. Name tags with identification were not worn by the personnel working in the area.

Physical nursing care. The patient was bathed with soap and water to keep her body clean and free from body discharges and perspiration.

---

[7]Good and Scates, op. cit., p. 647.

[8]Sellitz, et al., op. cit., p. 256.

Oral hygiene was done as requested. A damp wash cloth was placed on the patient's forehead if she desired. Clear liquids and ice water were given when requested. The patient was encouraged to empty her bladder at regular intervals.

Clinical observations. Fetal heart tones, and blood pressures were taken and recorded at least once every hour. Temperature, pulse and respirations were taken and recorded every four hours. Contractions were timed and recorded at least once every hour. Rectal examinations were done as deemed necessary.

Emotional support. The patient was told that the nurse would stay with her during her labor and delivery. The conversation was not initiated by the research nurse. If the patient asked questions, they were answered. When the medication was given to the patient she was told that it would take ten to fifteen minutes before she would feel the affects. She was told that the medication would not stop the pain entirely but would take the "edge off the pain". The patient was given encouragement and informed of the progress she was making.

Activities Included in Continuous Nurse Attendance for the Control Group Only

The patients were allowed to turn, sit up or lie in any position they desired. The head of the bed was elevated if the patient requested. At no time were they instructed in breathing and relaxation was not suggested.

Activities Included in Continuous Nurse Attendance and Instructions for Relaxation for the Experimental Group Only

Four breathing exercises and three body positions used for this study were selected from the Maternity Center Association's Psychophysical Preparation for Childbearing Guidelines For Teaching.[9]

The first stage of labor. During the first stage of labor abdominal breathing was taught. Instructions to the patient were as follows: "It is very important that you try to relax. To do this you must control your breathing. Think about breathing through your nose and breathing out through your mouth. When you do this, you will not be tense. Try to relax your hands, arms, legs, and let yourself go. When you are tense in one place, you are tense all over your body. The contractions will be more effective and not so painful if you are able to relax." The nurse demonstrated with her own breathing how to inhale through her nose and exhale through her mouth with a "sigh". This slow deep abdominal breathing was continued as long as the mother was comfortable.

During the first stage of labor two body positions were used. (1) If the mother preferred to lie on her back, the head of the bed was slightly elevated. A pillow was placed under her knees with the legs externally rotated and abducted. A folded bath towel was used to apply pressure to the sacral region when the patient complained of backache. (2) When the patient was on her side, the bed was flat with the pillow under her head. The lateral position was such as to allow the baby to rest on the bed. The pillow was placed between the knees while one knee rested over the other. The nurse applied pressure and/or rubbed the patient's sacral region during the contractions if the patient so desired.

---

[9]Psychophysical Preparation For Childbearing: Guidelines For Teaching, New York: Maternity Center Association, 1963, pp. 19-22.

The late first stage of labor. During the late first stage or transitional stage of labor, an attempt was made to teach the patient how to do shallow chest breathing or sternal respirations. The lips were relaxed and barely parted. Care had to be taken that inhalation and exhalation remained equal. If the patient seemed to be making good progress she was told that she might expect ten to twelve contractions which might seem to be more painful. After this she might feel the pressure of the baby's head and she would have the feeling of "pushing or bearing down."

The second stage of labor. Two types of breathing were used during the second stage. One was controlled breathing. As the contractions started, the patient was instructed to breathe in and out, in and out through the mouth, close the mouth and then hold the breath and bear down. She was told to hold the breath as long as possible. Then she was instructed to breathe out in the upper part of the chest with the mouth open, quickly breathe in again, close the mouth and hold the breath again, "pushing" as long as the contraction lasted. Panting deeply through the mouth was used when the mother was asked to stop pushing.

During the second stage of labor a modified squatting position was assumed. The patient was placed on her back with her head and trunk in a state of flexion. The hands were placed on her knees or the popliteal spaces and her legs pulled up so that her feet were off the bed. When she was "crowning" she was moved into the delivery room.

The research nurse stayed with the mother until the end of the second stage. Nursing duties included physically supporting the patient in a sitting position while the saddle block was given, recording the blood pressure every five minutes, and talking with the patient. The supportive

conversation gave the patient information, encouragement, and asked for her cooperation when the doctor desired her participation in the delivery. The research nurse left when the patient was relaxed and resting.

III. TOOLS USED IN COLLECTION OF THE DATA

Data Sheet

A sheet was developed in order that data could be recorded and statistically analyzed. (See Appendix A) The data sheet was divided into three parts. Part I was filled in before the subject was selected for the study. This was done to determine if the subject met specifications necessary to qualify for this study. Part II was filled in by the researcher during the time she stayed with the patient. Part III was the summary and the evaluation of the subject's response to the labor process.

Structured Observational Guide

The structured observation device used in this study was taken from a study of emotional reactions during labor by Kartchner because it most nearly paralleled this study.[10] The criteria used for the evaluation of the reaction of the patient to the labor process was graded into four classes. There were four observations to be made in each class. Values were assigned to the observations to aid in the statistical analysis. The excellent class was assigned four points, the good class three points, the fair class two points, and the poor class one point for each observation.

---

[10]Fred Kartchner, "A Study of the Emotional Reactions During Labor," American Journal of Obstetrics and Gynecology, 60:23, July, 1950.

The items were evaluated during the time the nurse stayed with the patient and coded immediately after delivery. The possible number of points for the guide was sixteen. (See Appendix B)

Questionnaire For The Patient

The questionnaire with "fixed-alternative" responses was adopted from a study by Walen.[11] The purpose of the questionnaire was to get a subjective response from the mother on how she felt about her experience of pain during the first and second stages of labor. The responses were expressions of degrees of pain as severe, moderate and slight. A response listed as slight was assigned the value of three points, while moderate was two points, and severe one point. The questionnaire also included a response which would describe the labor and delivery experience as "satisfying" or "unpleasant and very painful". A "satisfying" response was assigned the value of four points, while the "unpleasant and very painful" response was assigned two points. The possible number of points for the questionnaire was thirteen points.

The questionnaire was administered by the staff personnel not earlier than eight hours and not later than twenty-four hours after delivery. The research nurse did not see the patient after delivery until the questionnaire had been filled in. (See Appendix C)

IV. CONDITIONS OF RESEARCH

Setting For the Study

Hospital. The hospital selected for this study was a general service

---

[11] Walen, op. cit., p. 146.

county hospital located in southern California. The bed capacity of the maternity unit was twenty-five beds for mothers and twenty-three cribs. An average of 178 patients were delivered each month during the fiscal year of 1963-64. The medical staff for the maternity unit consisted of one staff doctor, one obstetrical resident, and two interns. The labor and delivery rooms were staffed with registered nurses, vocational nurses, and nurse aides. At least one registered nurse was on duty at all times. No visitors were allowed in the labor and delivery rooms.

Labor room. The labor room in this selected hospital was one large room with four patient units. Each unit consisted of the labor bed and the bedside table. The bedside table contained the usual equipment found in a labor room bedside table. Necessary charting materials, as well as linens, medications, and supplies as needed to care for a labor patient were kept in the room.

Permission to do the study. Permission to do the study was obtained from the Director of Nursing Service at the selected hospital.

Admission procedures. Most of the primigravida patients included in this study were completely effaced and two to three centimeters dilated when they were admitted to the hospital. The hospital nurses prepared the patients for delivery. This preparation included the perineal shave, a tap water enema, collection of the voided urine specimen, recording of the temperature, pulse, respirations, fetal heart tones, and blood pressure. The chart was started by the hospital nurse.

Medical management of the primigravida patient. The selected hospital was used for the post-graduate education of physicians. In this hospital the management of the labor process in the primigravida patient was not interrupted or modified through medical intervention until the

patient was "crowning". She was then delivered by the use of a saddle block, low forceps and episiotomy. Analgesics were given to the patients only when ordered by the doctor. The process of labor and the safety factor to the mother and baby appeared to have priority over the patient's comfort in the ordering of analgesics.

Time of the study. The data for the study was collected between May 2 and July 5, 1965. Hospital personnel were instructed to call the research nurse when the primigravida patients were admitted.

Selection of the patients. The patients in the experimental group were selected when they were admitted to the hospital. The patients in the control group were selected in the clinic. This method of selection was to serve two purposes. One purpose was to pair the subjects by age, race, and marital status with the experimental group. The other purpose was to notify the labor room nurses that this was a patient selected for the study and they were not to instruct the patient on how to breathe and relax during labor.

The researcher. The nurse conducting this study was meeting the requirements for a Master of Science degree in nursing. Included in her obstetrical nursing background were four years of supervising and teaching in a 500-bed private hospital in the Midwest, four years of supervising and anesthesia in the armed services, and two years of experience in management of the labor patient and obstetrical anesthesia during delivery in a 500-bed private hospital on the West Coast. This nurse was familiar with the selected county hospital since she had been working in this hospital intermittently for the past ten years.

Criteria Used to Select the Subjects

In this study it was the aim of the researcher to select a group of patients that (1) had no previous experience of childbirth, (2) were least likely to have received training for childbirth, (3) would profit from the instructions during labor, and (4) would terminate their pregnancy with a normal delivery of a full-term infant.

Davis and Morrone found in their study that there was a significantly positive relation between the type of occupation and the mother's desire to seek childbirth education. There was a corresponding decrease in interest as the occupation approached the level of unskilled and laborer occupations.[12] However, Walen's study of efficacy of education for childbirth showed that education for childbirth has a distinctly favorable effect on women of low education.[13] The county hospital patients were selected for this study because the majority of the patients are in a lower socio-economic group.

Primigravida patients were selected because they were free from the stretching and tearing from previous deliveries and because they had not experienced childbirth previously.

Married and single women of all ages and races were eligible to be included in the pilot study. After the pilot study, it was concluded that sixteen to thirty year-old primigravidas would most likely be included in a non-probability sampling.

---

[12]Clarence Davis and Frank Morrone, "An Objective Evaluation of a Prepared Childbirth Program," American Journal of Obstetrics and Gynecology, 84:1197, November, 1962.

[13]Walen, loc. cit.

To be assured of complete communication between the researcher and the subject, the research nurse chose only English-speaking patients for the study.

Those selected subjects were patients without obvious medical or obstetrical complications which would interfere with the normal physiological process of labor. All patients were diagnosed as having an adequate pelvis and a vertex presentation. The position of the baby was not considered for exclusion or inclusion because of the possibility that the position would change during labor.

Subjects with a full-term pregnancy were included. The expected date of confinement was calculated by Naegele's rule. The average duration of human pregnancy lies between 270 days or 38 weeks and 42 weeks as calculated by Naegele's rule which is counting from the first day of the last menstrual period.[14]

Patients that had a diagnosis of a nervous system disease, a mental illness, toxemia of pregnancy, diabetes, heart disease, multiple pregnancy, or excessive vaginal bleeding were excluded from the study. A patient with diabetes, heart disease, or toxemia of pregnancy was excluded because of the tendencies of the fetus to succumb as term approaches.[15] Also, when such disorders exist, labor is likely to be complicated with the medical treatment as well as the possibility of the termination of the pregnancy.[16]

---

[14]Nicholson Eastman and Louis Hellman, Williams Obstetrics, New York: Appleton-Century-Crofts, Inc., 1961, pp. 811-813.

[15]Ibid., p. 733.

[16]Greenhill, op. cit., p. 479.

Toxemia of pregnancy also predisposes to other complications as abruptio placenta, and hydatidiform mole.[17]

Plural pregnancies were excluded in as much as they frequently give rise to maternal and fetal disturbances. Labor with twins is often abnormal due to the overstretching of the uterine muscle, the contractions tend to be weak and effacement and dilatation of the cervix slow.[18] Patients with excessive vaginal bleeding were excluded because of the possible necessity of surgical interference.

Diseases of the nervous system include paralysis, multiple sclerosis, neuralgia, neuritis, poliomyelitis, myasthenia gravia, chorea, epilepsy, brain tumors, and intracranial hemmorhage.[19] A patient with one of these diseases was excluded in the study because of the possibility that the uterine contractions which are involuntary and depend on extra uterine control might be affected by this condition.[20]

Mental illness may include seizure disorders, organic mental syndrome, and affective disorders. Such a case would entail special handling by the doctor during labor and delivery and therefore render impossible the nurse-patient relationship demanded by this study.[21]

---

[17] Ibid., p. 494.

[18] Eastman and Hellman, op. cit., p. 222.

[19] Ibid., p. 375.

[20] Alan Guttmacher and Joseph J. Rovinsky, (eds.), Medical, Surgical and Gynecological Complications of Pregnancy, Baltimore: The Williams and Wilkins Company, 1960, pp. 336-342.

[21] Eastman and Hellman, op. cit., p. 820.

Pilot Study

A pilot study was conducted between March 25, 1965 and April 8, 1965 at the hospital selected for the study. Fourteen "unprepared" primigravida patients in active labor were included in the pilot study. The ages of the patients ranged from sixteen years to twenty-nine years. Twelve of the patients were Caucasian and two were Negro. The longest period of active labor was eighteen hours and the shortest period of active labor was two hours. The labor was terminated for each patient by the use of a saddle block, low forceps and episiotomy.

It was observed from caring for this group of patients that labor patients appeared to be responsive and receptive to emotional support and instructions. The breathing techniques used were (1) abdominal breathing, (2) sternal breathing, (3) pushing, and (4) panting. Most of the patients could not change from abdominal breathing to sternal breathing. The pushing and panting types of breathing were easy to learn and practice. The patients needed to be encouraged from time to time, especially during the "transition period".

The three body positions used were (1) on the back, (2) on the side, and (3) the modified squatting position. These positions seemed to be more comfortable for the patient than other positions.

The first plan was to have another nurse or the doctor make an observation and evaluate the reactions of the patient to the labor process. It was noted from the pilot study that the other nurses did not observe the patient and the doctor saw the patient only when the patient was uncomfortable or ready for delivery, therefore the collection of the data was limited to the observation of the research nurse and the subjective response of the patient.

V. SUMMARY

This chapter presents the methodology used to collect the data necessary to determine if the group of "unprepared" primigravida patients which have continuous nurse attendance plus instructions to aid relaxation by breathing techniques and body positions would show less evidences of pain, fear and tension than the group which received only the continuous nurse attendance. The experimental method of research was used. A structured observational guide and the questionnaire with "fixed-alternative" questions were used for each subject to determine the evidence of pain experienced during labor. The subjects were twenty "unprepared" primigravida patients in active labor in the maternity unit of a county hospital.

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with the analysis and interpretations of the data collected by the research nurse on twenty "unprepared" primigravida patients in active labor. Ten patients included in the experimental group received continuous nurse attendance plus instructions to aid relaxation by (1) breathing techniques, and (2) body positions, while ten patients in the control group received only continuous nurse attendance. The data collected was statistically analyzed by the use of the analysis of variance to determine if there was a relationship between the causal variable (instructions) and the dependent variable (pain, tension and fear) as expressed by the patient and observed and rated by the nurse.

I. PAIRING OF SUBJECTS

The subjects were paired by age, race, and marital status to minimize some of the variable factors. The ages for the two groups ranged from sixteen years to twenty-two years. The average age for the two groups was eighteen. Eighteen of the subjects were Caucasian, two were Negro. Fourteen of the subjects were listed as married, six as single. Information gained from pairing of the subjects may be found on Table I in the Appendix.

II. PRESENTATION AND ANALYSIS OF FINDINGS

Basis for Comparison

It was the hypothesis of this study that the "unprepared" primigravida patient who during the first and second stages of labor has continuous attendance by the research nurse plus instructions to aid in re-

laxation by (1) breathing techniques, and (2) body positions will display less evidence of fear, tension and pain as expressed by the patient and as observed by the nurse than the "unprepared" primigravida patient who has received only continuous nurse attendance. Two methods of evaluation were used to test the hypothesis at the .05 level of significance.

The first evaluation was done by an observation and coding of a score by the nurse. This was made by the use of a structured observational guide. The guide was graded into four classes with four observations in each class. The excellent class was assigned four points, the good class three points, the fair class two points, and the poor class one point for each observation. The items were evaluated during the time the nurse stayed with the patient and coded by the nurse immediately after delivery. The possible number of points for the guide was sixteen.

The second evaluation was a questionnaire with "fixed-alternative" questions filled in by the patient. The questionnaire was to get a response from the mother about her pain experience during the first and second stages of labor. The responses were expressed in degrees of pain as severe, moderate, and slight. A response listed as slight was assigned the value of three points, while moderate received two points, and severe received one point. This questionnaire also included a response which would describe the labor and delivery experience as "satisfying" or "unpleasant and very painful." The "satisfying" response was assigned the value of four points and the "unpleasant and very painful" response was assigned two points. The possible number of points for the questionnaire was thirteen points.

Supplementary data collected included the number of hours of active labor, the number of hours of nurse attendance, the units of medication given and the amount of dilatation when medication was given. The data collected are shown on Table II for the control group and Table III for the experimental group in the Appendix.

Null Hypothesis

In order to test the main hypothesis, it was necessary to set up the null hypothesis. The null hypothesis states that the "unprepared" primigravida patient who during the first and second stages of labor has continuous attendance by the research nurse plus instructions to aid in relaxation by (1) breathing techniques, and (2) body positions will display the same evidences of fear, tension and pain as expressed by the patient and as observed by the nurse as the "unprepared" primigravida patient who has received only continuous nurse attendance.

Structured Observation

The values assigned to the observational guide made it possible for the nurse's scores to range from sixteen to four.

Experimental group. The average score as coded by the nurse for the experimental group was 14.6. The scores ranged from sixteen to twelve with six of the group receiving a score of sixteen points. This score indicates that the patient's behavior during labor was under her control, that she was able to rest quietly between contractions, that she was free from any but the normal sounds of exertion, comments and expletives which often accompany active participation, and that she was free from cries of terror, excessive bed-gripping, wringing of hands, and writhing about.

Five of the patients receiving the score of sixteen were married Caucasian girls between the ages of seventeen and twenty-one years. The other patient was a sixteen year-old single Negro girl. Two of the patients receiving the lowest score of twelve were single Caucasian girls, seventeen and nineteen years of age.

Control group. The average score as coded by the nurse for the control group was 10.3. The scores ranged from fifteen to four. The patient receiving the highest score in this group was a single eighteen year-old Caucasian girl that gave her baby up for adoption. It was observed that this patient did abdominal breathing and did not get into a physiological position, as defined by Howard,[1] during the "bearing down" stage of labor. Her active labor period was four and one-half hours.

Two of the patients in this group receiving the low score of eight were in labor for twenty-four hours. The research nurse was unable to stay with them longer than fourteen hours which means the patients were relatively alone ten hours of the active labor period. One girl was a sixteen year-old single Caucasian girl, while the other was seventeen, Caucasian, and married. The lowest score of four was received by a single seventeen year-old Negro patient. This means that her conduct during labor showed lack of control of behavior and emotions from the onset of labor. She was unable to participate in the labor experience or make use of assistance and support offered to her by the nurse. She was unable to rest between the contractions and displayed apprehension, fear and anxiety

---

[1]Forrest H. Howard, "Delivery In The Physiologic Position," Obstetrics and Gynecology, 11:322, March, 1958.

by wringing of hands, writhing about, gripping of objects, and crying out.

Subjective Postpartum Evaluation

The possible range of scores for the subjective postpartum evaluation was thirteen to five.

Experimental group. The average score for the experimental group was 10.3. The range of scores was twelve to seven. Three of the patients scored twelve. Two were married, Caucasian, eighteen year-old patients, while the third patient was a sixteen year-old single Negro patient. Two of these patients were scored high by the nurse. The lowest score in this group was seven. This was scored by a single nineteen year-old Caucasian patient. All of the patients in the experimental group scored the response to pain as moderate or slight during the time the nurse stayed with them. Only one patient checked the response "labor is very painful and unpleasant." This was a seventeen year-old Caucasian single patient.

Control group. The range of scores in the control group was thirteen to five with an average for the group of 9.5. This is an .8 difference from the average of the scores on the experimental group. The seventeen year-old married Caucasian patient scoring herself a maximum score of thirteen points was rated as fair by the nurse. The patient scoring the lowest score of five points was rated as poor by the nurse. This patient was a seventeen year-old single Negro girl. Five (fifty per cent) of the patients in the control group checked the response of severe pain during the time the nurse stayed with them. Two (twenty per cent) checked the response "labor is very painful and unpleasant." One was a Caucasian single sixteen year-old girl; the other a Negro single seventeen year-old girl.

It would seem to the researcher in this limited study that age, race and marital status was not significant. It was difficult to make meaningful inferences about the relationships between the pain experience as observed by the nurse and perceived by the patient and the age, race and marital status of the subjects in this study.

Statistical Analysis and Interpretations

The analysis of variance was chosen as the statistical method for analyzing the data. The analysis of variance determines the difference between the means and is used for partitioning the total variation in a set of data according to the various sources of variation that are present.[2] Differences between the means of nurses' scores of the experimental group and control group and patients' scores of the two groups were used to support or reject the null hypothesis.

Nurse's rating of patient behavior. The statistical analysis of data showed the difference between the means of the nurse's rating of patient behavior during labor of the two groups to have a probability of .0011 at the .05 level of significance. This indicates that there was a significant difference between the behavior during labor of the experimental group and control group and difference did not occur by chance. This finding partially rejects the null hypothesis and supports the main hypothesis.

The finding that there was a significant difference between the groups as observed and rated by the research nurse may have been in-

---

[2]David V. Huntsberger, Elements of Statistical Inference, Boston: Allyn and Bacon, Inc., 1961, p. 212.

fluenced by many factors. One factor may have been that this finding was based on an evaluation made by observation. Good and Scates state that the most direct means of studying overt behavior is by observation.[3] In a situation where pain is being observed, Beecher states "only a subjective response may be used to evaluate a painful sensation."[4] However, Hardy and Javert maintain that there is a clear distinction between the intensity of pain perceived by the patient and visible evidences of reaction to pain perceived by an observer, such as complaining, groaning and crying out.[5] Therefore, the researcher may have shown a bias in evaluating the visible reactions to pain in terms of what she thought was acceptable behavior for a patient in labor.

Another influencing factor may have been fatigue. Hardy and Javert concluded from their study that the reactions of the patient depend to a great extent on fatigue.[6] Read agrees with Hardy and Javert and lists other factors as anemia, weariness of mind (depression, disappointment) as well as tiredness of the body which predisposes to lower the threshold of pain interpretation.[7] This study did not take into consideration the physical, mental, or emotional status of the patient when she started in active labor.

---

[3]Good and Scates, loc. cit.

[4]Henry Beecher, "Pain-Controlled and Uncontrolled," Science, 117: 165, February 13, 1953.

[5]James D. Hardy and Carl Javert, "Studies on Pain: Measurements of Pain Intensity in Childbirth," Journal of Clinical Investigation, 28:159, January, 1949.

[6]Ibid., p. 161.

[7]Read, op. cit., p. 20.

The active participation by verbal communication and body contact between the nurse and the experimental group of patients may have helped to alleviate the anxiety which is felt when one woman observes another woman in pain.[8] Feelings of helplessness produce anxiety.[9] As anxiety increases so do unpleasant emotional reactions increase.[10] As the nurse stayed with the control group the feeling of helplessness may have increased her feelings of anxiety and in turn influenced the scoring of the control group, since the nurse limited the verbal communication and body contact for this group.

Patients' scoring of pain perception. Statistical analysis of data showed a difference between the means of the patients' scores of the experimental group and control group to have a probability of .16 at the .05 level of significance. This partially supports the null hypothesis that the instructions did not significantly change the pain perception of the group as expressed by the patients.

Factors which may have influenced this finding are lack of knowledge on the part of the primigravida patient, a fear of the unknown and/or previous unpleasant experiences. The fact that all of the patients were given the same explanation about the effects of the medication when it was

---

[8]William R. Rosengren, "Some Social Psychologic Aspects of Delivery Room Difficulties," Journal of Nervous and Mental Disease, 132:515, June, 1961.

[9]Harold Davidson, "The Psychosomatic Aspects of Educated Childbirth," New York State Journal of Medicine, 55:2506, November 1, 1963.

[10]Kartchner, op. cit., p. 23.

administered may have influenced them to respond in the same way on the questionnaire. Analgesics affect the reaction component, not the original sensation of pain.[10]

Other factors may have been the "fixed-alternative" responses in the questionnaire, the time the questionnaire was administered, the manner in which the hospital personnel approached the patient to fill in the questionnaire. The interpersonal relationships between the patient and the nurse and the patient and the doctor may have influenced the patient to perceive the pain experience as she did.

Even though the statistical analysis showed little or no significance, the patients in the experimental group all scored the response to pain as moderate or slight during the time the nurse stayed with them while fifty per cent of the patients in the control group scored the response to pain as severe during the time the nurse stayed with them.

The researcher recognizes that there were many factors influencing the coding of the scores during labor as well as the scoring coded after delivery.

Analysis of Supplementary Data

Number of hours in active labor. The criteria used for the onset of active labor was regular, painful uterine contractions as observed by the patient. Each patient was asked when the regular contractions started and were painful to her. The active period of labor extended until the birth of the baby. Labor time ranged from four to twenty-four hours. The

---

[10]C. T. Javert and J. D. Hardy, op. cit., p. 159.

average time of labor for the control group was 12.3 hours. The average time for the experimental group was 8.7 hours. One explanation for the difference of 3.6 hours may be explained by the fact that the experimental group had less medication. The medication was given later, so that there may have been less chance for the medication to slow down or inhibit labor. The experimental group was given instructions to aid relaxation by (1) breathing techniques, and (2) body positions. A change of position affects a change in the pattern of uterine contractions.[11] The researcher observed that this group of patients seemed to have effective contractions and could be described as having hard labor and making good progress.

Number of hours of nurse attendance. The longest time of nurse attendance was fourteen hours and the shortest time was two and one-half hours. The average time that the nurse stayed with a patient in the control group was 8.5 hours. The average time spent with the experimental group was 6.15 hours. This time was determined by using the actual hours that the research nurse was in attendance. A total of 146 hours was spent in attendance by the researcher in the main study. The number of hours of nurse attendance may have influenced the scoring by the nurse as well as the patient. The researcher felt that such a study was not practical for one person to conduct due to the length of labor of the primigravida patient as well as the type of intensive nursing care given to a labor patient with continuous nurse attendance. The research nurse recognizes that the patient may not have wanted continuous nurse attendance and would have felt more relaxed to have been left alone.

---

[11]Greenhill, op. cit., p. 175.

Units of medication. The unitage of medication was calculated as proposed by Davis and Morrone.[12] Demerol 50 mg. was given the unit value of one, as was Nisentil 60 mg. These were the only two drugs used for this group of patients. Units of medication given ranged from six units for one patient to no medication for one patient. The average dosage for the control group was 2.65 units. The average dosage for the experimental group was 1.8 units. The medication which was given to the patient was ordered by the doctor. During the time interval of this study, a number of interns had the prerogative to order the drug to be given as well as to state when it would be administered. These factors may have influenced the findings of the study.

Cervical dilatation when the medication was given. One patient did not receive medication. This patient seemed to have very irregular uterine contractions which stopped for hours at a time. She was advised not to take medication unless the contractions became severe, and they never did. The amount of cervical dilatation ranged from one centimeter to ten centimeters. The average amount of cervical dilatation when the first dose of medication was given was 3.6 cm. for the control group and 5.2 cm. for the experimental group. A record was kept of the amount of dilatation when the medication was given as a possible indication of the intensity of pain experienced by the patient. The experimental group seemed to be relatively comfortable until the transition stage. At no time did the research nurse intend to influence the patient to take or not to take medication. However it is recog-

---

[12]Davis and Morrone, op. cit., p. 1200.

nized that factors which may have influenced the ordering of medication were present such as the time of day, the number of patients in the labor room, the manner in which the order was obtained, the attitudes of the patient receiving continuous nursing care, the acceptance of the research nurse by the hospital nurse, and the difference in the doctor's orders as well as many other unknown factors.

Comparison of the means of the two groups. It may be noted from Table IV that there is a difference between the means of the number of hours in labor, the time the nurse spent in attendance, the units of medication given, and cervical dilatation when the medication was given. The group of patients which received instructions to aid relaxation by (1) breathing techniques and (2) body positions were in labor a shorter period of time, therefore had less number of hours of nurse attendance. Also, this group had less medication and it was administered later in labor.

Statistical analysis of supplementary data. The analysis of variance method was used to analyze the supplementary data. The following four differences between means did not show a significant difference between the two groups. The four are listed as follows:

1. Difference between the means of the number of hours of active labor showed a probability of .08.

2. Difference between the means of the hours of nurse attendance showed a probability of .07.

3. Difference between the means of the units of medication showed a probability of .21.

4. Difference between the means of the amounts of cervical dilatation when the medication was given showed a probability of .06.

The small number of population in the sample groups may have influenced the outcome of the findings.

III. SUMMARY

This chapter contains a presentation, analysis and interpretation of data collected by the research nurse on twenty "unprepared" primigravida patients in active labor.

It was hypothesized that the patients receiving continuous nurse attendance plus instructions to aid relaxation by (1) breathing techniques, and (2) body positions would show less evidences of pain, tension and anxiety as expressed by the patient and observed and coded by the nurse than the group of patients which received only the continuous nurse attendance. Two methods of evaluation were used to test the hypothesis.

Using the analysis of variance method to determine the difference between the means it was found that there was a significant difference between the groups as observed and coded by the nurse. The evidences of pain, tension and anxiety as expressed by the patients did not show a significant difference between the means of the two groups when the data was analyzed.

An analysis done on other data showed that there was not a significant difference between the means of the two groups in total number of labor hours, number of hours of nurse attendance, units of medication given and cervical dilatation when the medication was given.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

A causal-comparative study was conducted to determine if the "unprepared" primigravida patient in active labor who during the first and second stages of labor had continuous nurse attendance plus instructions to aid in relaxation by (1) breathing techniques and (2) body positions would show less evidence of pain, fear and tension as expressed by the patient and observed by the nurse than the "unprepared" patient who had only continuous nurse attendance. The experimental method of research with parallel groups and a non-probability sampling of purposive samples was used.

The review of literature indicated that pain is a response to a stimulus which is subjectively experienced and interpreted in terms of the meaning which it has for the individual. During childbirth the emotional reactions are such that there may be a dissociation of pain for the individual. The literature reviewed showed the relationship between relaxation and pain, as well as a relationship between relaxation during labor, breathing techniques, and body positions.

This study was made at a general service county hospital in southern California. A pilot study including fourteen subjects was done. Evaluation methods were altered. Breathing techniques and body positions were verified. Scope and limitations for this study remained the same. Twenty "unprepared" primigravida patients were included in the main study which was done between May 2, 1965 and July 5, 1965. Ten of the patients received

continuous nurse attendance plus instructions to aid relaxation by (1) breathing techniques and (2) body positions during the first and second stages of labor while the other ten patients acted as the control group and received only continuous nurse attendance.

Breathing techniques included (1) slow, deep, abdominal breathing, (2) shallow chest breathing or sternal respiration, (3) "pushing", and (4) panting respirations. Body positions used were (1) a supine position with partial flexion of joints, (2) a lateral position with knees flexed and baby's weight resting on bed, and (3) a modified squatting position.

Tools used to collect the data consisted of (1) a structured observational guide which was coded by the research nurse immediately after the delivery, and (2) a questionnaire with "fixed-alternative" questions which was administered to the patients between eight and twenty-four hours after delivery by the hospital personnel. Patients were paired by age, race and marital status.

An analysis of variance was used to test the hypothesis. The difference between the means of the scores of the two groups as rated by the nurse showed a probability of .0011 which is significant at the .05 level. The difference between the means of the scores of the two groups as expressed by the patients showed a probability of .16 which is not significant at the .05 level. On the basis of the statistical analysis the main hypothesis was rejected.

Supplementary data collected suggested that there may have been other factors which would be of benefit to the patient, such as a shorter length of active labor, less medication, and the medication given later.

This data was analyzed by use of the analysis of variance and the probability of chance was too great to be significant at the .05 level.

Some possible factors which may have influenced the outcome of the differences between the means of the two groups are: (1) the tools used to collect the data may not have been adequate to measure a change of behavior due to instruction when pain, fear and anxiety is the variable, (2) the bias of the research nurse which influenced her observations and coding of the scores, (3) the many factors related to pain perception which would influence the patients in an expression of their pain experience, (4) the small number of patients and heterogeniety of the sample group, (5) the breathing techniques and body positions selected and used for the study may not have been suitable to aid relaxation, (6) the selection of patients from a county hospital where the patients' responses could have been influenced by many social, economic, and emotional problems, and (7) the values assigned to the observations and responses may have influenced the statistical analysis.

II. CONCLUSIONS

Since this study was based on twenty subjects, the conclusions drawn were tentative. The findings suggest:

1. An accurate evaluation of the emotional responses during labor is difficult because of the complex objective, subjective, conscious and unconscious factors.

2. The patient tends to think of the labor and delivery experience as "satisfactory" and to express the pain as moderate or severe eight to twenty-four hours after delivery.

3. The statistical analysis done on the supplementary data showed more significant difference between the means of the number of hours of active labor and the cervical dilatation when the medication was given than the analysis of patients' scores. This indicates that there were factors other than less pain, fear and tension to be considered for the patient receiving continuous nurse attendance plus instructions to aid relaxation by (1) breathing techniques, and (2) body positions.

III. RECOMMENDATIONS

Since the present day emphasis is on giving the labor patient individual attention and support, this study seems worthy of further investigation. It is not recommended that such a study as this one be repeated because it is not practical for one person to conduct such a study. It is recommended that another study be done using a larger sample with modifications and refinements of methodology.

It is suggested that further study be done on possible factors which may aid relaxation during labor, such as body positions, verbal suggestions, and nurse attendance only during the uterine contraction. It is hypothesized by the researcher that the "unprepared" primigravida patient who during the first and second stages of labor receives verbal communication and body contact only during the contraction from a nurse will have a more "satisfying" experience as expressed by the patient than the patient who has continuous nurse attendance plus instruction to aid relaxation by (1) breathing techniques and (2) body positions.

BIBLIOGRAPHY

BIBLIOGRAPHY

A. BOOKS

Bonica, John J. The Management of Pain. Philadelphia: Lea and Febiger, 1953.

Bonstein, Isidore. Psychoprophylactic Preparation For Painless Childbirth, New York: Grune and Stratton, Inc., 1958.

Buxton, C. L. A Study of Psychophysical Methods for Relief of Childbirth Pain, Philadelphia: W. B. Saunders Company, 1962.

Cannon, Walter. Bodily Changes in Pain, Hunger, Fear, and Rage. Boston: Branford, 1953.

Coleman, James. Abnormal Psychology and Modern Life. Chicago: Scott, Foresman and Company, 1950.

Davis, M. E. and C. E. Sheckler. DeLee's Obstetrics for Nurses. Sixteenth edition. Philadelphia: W. B. Saunders Company, 1957.

Deutsch, Helen. The Psychology of Women. Volume II. New York: Grune and Stratton, Inc., 1945.

Eastman, Nicholson J. and Louis M. Hellman. Williams Obstetrics. Twelfth edition. New York: Appleton-Century-Crofts, Inc., 1961.

Fitzpatrick, Elise and Nicholson J. Eastman. Zabriskie's Obstetrics For Nurses. Tenth edition. Philadelphia: J. B. Lippincott Company, 1960.

Good, Carter V. and Douglas E. Scates. Methods of Research. New York: Appleton-Century-Crofts, Inc., 1954.

Goodrich, Frederick W. Natural Childbirth. New York: Prentice-Hall, Inc., 1950.

Greenhill, J. P. Obstetrics. Philadelphia: W. B. Saunders Company, 1960.

Guttmacher, Alan and Joseph J. Rovinsky (eds.) Medical, Surgical and Gynecological Complications of Pregnancy. Baltimore: The Williams and Wilkins Company, 1960.

Guyton, Arthur. Textbook of Medical Physiology. Philadelphia: W. B. Saunders Company, 1961.

Hardy, James D., Harold G. Wolff, and Helen Goodell. Pain Sensations and Reactions. Baltimore: The Williams and Wilkins Company, 1952.

Heardman, Helen. Natural Childbirth. Baltimore: The Williams and Wilkins Company, 1949.

_____. A Way to Natural Childbirth. Baltimore: The Williams and Wilkins Company, 1949.

Huntsberger, David V. Elements of Statistical Inference. Boston: Allyn and Bacon, Inc., 1961.

Jacobson, Edmund. Progressive Relaxation. Chicago: The University of Chicago Press, 1958.

_____. How To Relax and Have Your Baby. New York: McGraw-Hill Book Company, Inc., 1959.

Meyer, Burton and Loretta E. Heidgerken. Introduction to Research in Nursing. Philadelphia: J. B. Lippincott Company, 1962.

Miller, John Seldon. Childbirth A Manual For Pregnancy and Delivery. New York: Atheneum, 1963.

Miller, William. Relax and Enjoy Life. New York: A. S. Barnes and Company, 1951.

Rasch Philip J. and Roger K. Burke. Kinesiology and Applied Anatomy. Philadelphia: Lea and Febiger, 1959.

Rathbone, Josephine L. Relaxation. New York: Bureau of Publications Teachers College, Columbia University, 1943.

Read, Grantly Dick. Natural Childbirth. London: Heinemann, 1933.

_____. Childbirth Without Fear. New York: Harper and Brothers Publishers, 1944.

_____. The Birth of a Child. New York: The Vanguard Press, Inc., 1950.

Ruch, Theodore and John Fulton. (eds.) Medical Physiology and Biophysics. Eighteenth edition. Philadelphia: W. B. Saunders Company, 1960.

Sellitz, Claire, et al. Research Methods in Social Relations. New York: Holt, Rinehart and Winston, 1959.

Smith, Christine Spahn. Maternal-Child Nursing. Philadelphia: W. B. Saunders Company, 1963.

Thoms, Herbert. Childbirth With Understanding. Springfield, Illinois: Charles C. Thomas, 1962.

_____. Training For Childbirth. New York: McGraw-Hill Book Company, 1950.

Vellay, Pierre. Childbirth Without Pain. New York: E. P. Dutton and Company, Inc., 1960.

Willson, J. Robert. Management of Obstetrical Difficulties. St. Louis: C. V. Mosby Company, 1961.

Wolff, Harold G. and Stewart Wolf. Pain. Second edition. Springfield, Illinois: Charles C. Thomas, 1958.

Ziegel Erna and Carolyn Van Blarcom. Obstetric Nursing. Fifth edition. New York: The Macmillan Company, 1964.

B. PERIODICALS

Aring, Charles. "The Nature and Significance of Chronic Pain," The Medical Clinics of North America, 42:1467-79, November, 1958.

Beecher, Henry. "Pain-Controlled and Uncontrolled," Science, 117:164-65, February 13, 1953.

Chertok, L. "Theories of Psychoprophylaxis in Obstetrics (Prophylaxis or Therapy)," American Journal of Psychiatry, 119:1152-9, June, 1963.

Davidson, Harold. "The Psychosomatic Aspects of Educated Childbirth," New York State Journal of Medicine, 53:2499-2510, November 1, 1953.

Davis, Clarence and Frank Morrone. "An Objective Evaluation of a Prepared Childbirth Program," American Journal of Obstetrics and Gynecology, 84:1196-1201, November 1, 1962.

Fitzhugh, M. R. and M. Newton. "Muscle Action During Childbirth," The Physical Therapy Review, 36:805-809, December, 1956.

Friedman, Emanuel. "Primigravid Labor" Obstetrics and Gynecology, 6:567-587, December, 1955.

Goodrich, Frederick W. and Herbert Thoms. "A Clinical Study of Natural Childbirth," American Journal of Obstetrics and Gynecology, 56:875-883, November, 1948.

Hardy, James D. and Carl T. Javert. "Studies on Pain: Measurements of Pain Intensity in Childbirth," Journal of Clinical Investigation, 28:153-162, January, 1949.

Hellman, Louis and Frances O'Brien. "Nurse-Midwifery An Experiment in Maternity Care," Obstetrics and Gynecology, 24:343-349, September, 1964.

Howard, Forrest H. "Delivery In The Physiologic Position," Obstetrics and Gynecology, 11:318-322, March, 1958.

Jacobson, Edmund. "Relaxation Methods in Labor," American Journal of Obstetrics and Gynecology, 67:1035-1048, May, 1954.

Javert, Carl. "Measurement of Pain Intensity in Labor and Its Physiologic, Neurologic, and Pharmalogical Implications," American Journal of Obstetrics and Gynecology, 60:552-553, September, 1963.

Johnston, Robert, Robert Franklin and Larry Roffman. "Is Prenatal Care Beneficial or Necessary?" Southern Medical Journal, 57:399-402, April, 1964.

Kartchner, Fred. "A Study of the Emotional Reactions During Labor," American Journal of Obstetrics and Gynecology, 60:19-29, July, 1960.

McCarthy, Francene. "Nursing Care in Obstetrics," The Canadian Nurse, 60:881-883, September, 1964.

Montgomery, Thaddeus. "Physiologic Considerations in Labor and The Puerperium," American Journal of Obstetrics and Gynecology, 76: 706-715, October, 1958.

Moya, F. and others. "Influence of Maternal Hyperventilation on the Newborn Infant," American Journal of Obstetrics and Gynecology, 91:76-84, January 1, 1965.

Read, Grantly Dick. "An Outline of the Conduct of Physiological Labor," American Journal of Obstetrics and Gynecology, 54:702-710, October, 1947.

Reid, Duncan E. and Mandel E. Cohen. "Evaluation of Present Day Trends in Obstetrics," Journal of American Medical Association, 142:615-623, March 4, 1950.

Rosengren, William R. "Some Social Psychologic Aspects of Delivery Room Difficulties," Journal of Nervous and Mental Disease, 132:515-521, June, 1961.

Senders, Virginia. "After Office Hours," Obstetrics and Gynecology, 14:817-824, December, 1959.

Shainess, Natalie. "The Psychologic Experience of Labor," New York State Journal of Medicine, 63:2923-2932, October 15, 1963.

Speck, G. "Childbirth With Dignity," Obstetrics and Gynecology, 2:544-545, November, 1953.

Thoms, Herbert and E. D. Karlovsky. "Two Thousand Deliveries Under Training for Childbirth Program: Statistical Survey and Commentary," American Journal of Obstetrics and Gynecology, 68:279-284, July, 1954.

_____, and R. H. Wyatt. "One Thousand Consecutive Deliveries Under a Training For Childbirth Program," American Journal of Obstetrics and Gynecology, 61:205-209, January, 1951.

_____, and William C. Billings. "A Consideration of Childbirth Programs," The New England Journal of Medicine, 255:860-861, November 1, 1956.

Tupper, Carl. "Conditioning For Childbirth," American Journal of Obstetrics and Gynecology, 71:733-740, April, 1956.

Van Auken, William and David Tomlinson. "An Appraisal of Patient Training For Childbirth," American Journal of Obstetrics and Gynecology, 66:100-105, July, 1953.

Walan, Briht Bergstrom. "Efficacy of Education for Childbirth," Journal of Psychosomatic Research, 7:131-146, October, 1963.

Zborowski, Mark. "Cultural Components in Response to Pain," Journal of Social Issues, 8:16-30, April, 1952.

C. OTHER MATERIALS

Buxton, R. St. J. "Breathing in Labor," News Letter, The Obstetric Association of Chartered Physiotherapists, (Brit.) September, 1963.

Fitzhugh, Mabel Lum. Preparation For Childbirth. Aksarben Press, USA, 1963.

Meeting the Childbearing Needs of Families in a Changing World. Report of a Work Conference sponsored by Maternity Center Association, New York, 1962.

Psychophysical Preparation For Childbearing. Published by Maternity Center Association, 1963.

U. S. Bureau of the Census, Statistical Abstract of the United States: 1964, Eighty-fifth edition, Washington, D. C., Government Printing Office, 1964.

APPENDIX A

DATA SHEET

Subject #_____ Date_____

Hospital # _____

Patient's name_____ Age_____
(16-30)

EDC_____ Race_____ Para_____ Gravida_____
(38-42 weeks) Abortion_____
(Under 3 mos.)

Married: Yes_____ No _____

English speaking: yes _____ No _____

Previous "childbirth training" yes_____ No _____

Patient has been diagnosed by the doctor as:

Mentally ill	Multiple pregnancy
Diabetic	Excessive vaginal bleeding
Cardiac	Adequate pelvis
Toxemia of pregnancy	Vertex presentation

Admission to hospital
Date_____
Time_____

Nurse attendant
Date_____
Time_____

Active labor
Date_____
Time_____

Medication
Type_____
Time_____
Cm dilated_____

Anesthetic_____

Type of delivery_____

Position_____Wt._____

Time_____

Summary:

Total number of hours nurse attendance_____

Total number of hours patient in active labor_____

Evaluation:

	Class I	Class II	Class III	Class IV
1				
2				
3				
4				

APPENDIX B

OBSERVATIONAL GUIDE

Class I: Excellent

1. The patient's conduct during labor with or without medication is always under her control although she may demonstrate normal, controlled apprehension and curiosity.

2. The patient is able to rest quietly between contractions. During the first stage she may demonstrate some increase in mental and physical activity, but this is always within control, is purposeful, and does not give the feeling or impression that it is overwhelming, or that the anxiety and fear it covers are all engrossing.

3. Throughout labor, she is free from any but the normal sounds of exertion, comments, and expletives which often accompany active participation.

4. She is free from cries of terror, excessive bed-gripping, wringing of hands, writhing about.

Class II: Good

1. The patient's behavior during labor, with or without medication, is out of her control only occasionally and to a minimal degree. Control is easily regained with support from her attendants and/or medication.

2. The patient rests most of the time between contractions and behavior is appropriate. She may fuss and complain of discomfort during the second stage, but to a minimal degree.

3. The patient experiences a minimal degree of unpleasant emotions and sensations. There may be sounds of exertion, comments, and expletives indicating this.

4. The patient cries out from time to time with contractions and demonstrates a minimal amount of fussing and tension. She is still free of bed-gripping, writhing about, and wringing of hands.

Class III: Fair

1. The patient, with or without medication, loses control of her conduct and behavior during 50% of the labor time.

2. The patient rests between contractions during the first stage of labor but demonstrates muscle rigidity, tension, fear, and moans with contractions.

3. The patient shows moderate to marked apprehension and fear, doubt, and ignorance of the labor process. Behavior and demeanor indicate definite unpleasant emotional and physical sensations.

4. She is unable to control outcries, moaning, muscle rigidity, wringing of hands, etc., 50% of the time. During the second stage and toward the end of labor, she is completely out of control. A patient who has been in Class I or II may fall into this third class after medication is given and deeper unconscious motivating forces are allowed expression.

Class IV: Poor

1. The patient, with or without medication, shows complete lack of control of behavior and emotions from the onset of labor. She is unable voluntarily to participate in the labor experience. She is unable to make use of assistance and support offered by attendants. She may reject them.

2. She is unable to rest or control her behavior and activity during the entire labor.

3. Apprehension and fear are marked and constant. There is no evidence of compensatory or adjustment mechanisms acting to bring emotions and behavior under control.

4. The patient cries out with contractions from the onset of labor. Muscle rigidity, tension, wringing of hands, writhing about, gripping of objects, screams for mother, husband for help.

APPENDIX C

Questionnaire (to be filled out by the mother)

Please answer the following questions not earlier than eight hours and not later than twenty-four hours after completion of delivery.

1. How do you feel about the pain you experienced during your labor and delivery?

   Please answer by checking one of the responses in the following three areas:

   When you were admitted to the hospital?

   ( ) "terrible, unbearable"
   ( ) "tolerable, not as bad as expected"
   ( ) "not too bad" "comfortable"

   During the time the nurse stayed with you?

   ( ) "terrible, unbearable"
   ( ) "tolerable, not as bad as expected"
   ( ) "not too bad" "comfortable"

   During the time you were in the delivery room?

   ( ) "terrible, unbearable"
   ( ) "tolerable, not as bad as expected"
   ( ) "not too bad, comfortable"

2. It is now at least eight hours after you have had the baby. How do you feel about the experience? Check the response which describes how you feel.

   ( ) "I feel pleased and happy with myself and would like to have another baby"

   ( ) "I feel that labor is a very painful and unpleasant experience and I am not anxious to repeat it."

Sign Name_____

Date_____

APPENDIX D

TABLE I

PAIRING OF SUBJECTS

AGE		RACE	MARITAL STATUS
Experimental	Control		
16	17	Negro	Single
17	17	Caucasian	Married
17	16	Caucasian	Single
18	17	Caucasian	Married
18	18	Caucasian	Married
18	18	Caucasian	Married
19	18	Caucasian	Single
19	19	Caucasian	Married
21	21	Caucasian	Married
21	22	Caucasian	Married

TABLE II

DATA COLLECTED ON THE CONTROL GROUP

Case Number	Hours in Active Labor	Nurse Attendance Hours	Medication Units	Dilatation When Medication Given		Score	
						Nurse	Patient
1	4.5	2.5	3	4		15	10
2	14	11	1 2	1		14	10
3	11	11	3	4		10	13
4	8.25	7.5	3	3		12	12
5	24	14	3	3		8	8
6	23	14	6	3		8	8
7	9	7	2	4		12	9
8	13	7	1.5 3	4		4	5
9	7	5	2	5		8	10
10	9	6	2	5		12	10

TABLE III

DATA COLLECTED ON THE EXPERIMENTAL GROUP

Case Number	Hours in Active Labor	Nurse Attendance (Hours)	Medication (Units)	Dilatation When Medication Given	Score	
					Nurse	Patient
1	4	4	2	4	12	7
2	12	10.5	2	6	16	10
3	6	5	2	4	16	12
4	5	3	2	9	14	12
5	7.5	6	2	6	16	10
6	5	3.5	2	3	16	11
7	15.5	8	2	5	12	9
8	4	2.5	2	5	16	12
9	18	14	0	0	12	9
10	9.5	5	2	10	16	11

LOMA LINDA UNIVERSITY

Graduate School

THE RELATIONSHIP OF INSTRUCTIONS DURING LABOR AND RELAXATION

By

Frances Josephine Hume Lopez

An Abstract of a Thesis

in Partial Fulfillment of the Requirements

for the Degree Master of Science

in the Field of Nursing

September 1965

ABSTRACT

A causal-comparative study was done in a county hospital using twenty subjects to determine if the "unprepared" primigravida patient in active labor will experience less pain if given instructions to aid relaxation. It was hypothesized that the "unprepared" primigravida patients receiving continuous nurse attendance plus instructions to aid relaxation by (1) breathing techniques, and (2) body positions would show less evidences of pain, tension and anxiety during the first and second stages of labor than the group of patients which received only the continuous nurse attendance.

Two devices, (1) a structured observation, (2) a questionnaire with fixed-alternative questions, were used to compute a value which could be analyzed to test the hypothesis. Data collected was statistically analyzed by an analysis of variance method. The hypothesis was rejected. Factors which may have influenced the findings are: (1) the tools did not measure the pain, fear and anxiety behavior and perception accurately, (2) the bias of the researcher, (3) the many factors related to the pain perception, (4) the small number of patients and heterogeniety of the sample group, (5) the causal variable selected and used, (6) county hospital patients, and (7) values assigned to observation and responses. The findings suggest: (1) an accurate evaluation of emotional responses during labor is difficult, (2) the patient thinks of the labor and delivery experience as "satisfactory" and expresses the pain as moderate or severe eight to twenty-four hours after delivery, (3) the supplementary data showed more statistical difference between the groups

than data analyzed to test the hypothesis. Recommendations for further study would include a larger sample with modifications and refinements of methodology. Suggestions for further study would include body positions, verbal suggestions, and nurse attendance only during the contraction.

Frances Josephine Hume Lopez