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A COMPARISON OF CHILDBIRTH PREPARATION AND NON-PREPARATION
ON SELECTED PHYSIOLOGICAL VARIABLES AND ATTITUDES TO
PREGNANCY AND DELIVERY IN PRIVATE PATIENTS

A Dissertation
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ABSTRACT

The purpose of this study was to determine if formal childbirth preparation had an influence on selected physiological aspects of childbirth, and to determine the influence of this preparation on maternal attitudes to pregnancy and delivery in private patients.

The sample was selected according to the following restrictions:

1. The physiological data collected were from private patient records of women who delivered their child between March 1, 1980 and May 31, 1980.
2. Only women who delivered their child vaginally (not by Caesarean section) were included in the study.
3. Only women who delivered a single child (not multiple births) were included in the study.
4. Only women who delivered a live infant (not still-born) were included in the study.
5. Only primiparous (those women having their first child) were included in the study.

The physiological data were gathered from 60 randomly selected private patient hospital records. The physiological data included the amount and type of medication used, duration of first and second stage labor, general health of the infant as measured by the Apgar Score and birth weight, the incidence of spontaneous deliveries, and duration of the hospital stay. The attitudinal data were collected by mail

using the Maternal Attitude to Pregnancy Instrument.

The physiological data were analyzed using the analysis of variance and chi-square test. The Mann-Whitney U and discriminant analysis procedures were employed in the analysis of the psychological (attitudinal) data.

Significant differences were found between the prepared childbirth group and non-prepared group on maternal attitudes to pregnancy and delivery. The prepared childbirth group was found to have more positive attitudes to pregnancy and delivery than the non-prepared group.

No significant differences were found between the two groups on the following physiological variables:

1. Amount of medication used.
2. Type of medication used (either conduction or local anesthesia).
3. The duration of labor.
4. The Apgar Score of the infant.
5. The birth weight of the infant.
6. The incidence of spontaneous deliveries.
7. The duration of the hospital stay.

The childbirth preparation group was found to be significantly older than the non-prepared group. The two groups were also found to differ significantly on the method of feeding of the infant. Those subjects in the prepared group were more likely to breast feed their infant, while those subjects in the non-prepared group were more likely to bottle feed.

From the analysis of data, the following conclusions were made:

1. Formal childbirth preparation should not be viewed as a mechanism to improve the physiological aspects of labor and delivery. However, formal childbirth preparation provided no evidence of adverse physical effects on labor and delivery.

2. The newborn infant does not benefit physically from maternal participation in formal childbirth preparation as demonstrated by the evaluative procedures in this study. However, maternal participation in formal childbirth preparation provided no evidence of adverse physical effects on the infant as demonstrated by the evaluative procedures in this study.

3. Positive attitudinal changes can be derived from maternal participation in formal childbirth preparation.

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CHAPTER I

INTRODUCTION

The organization of health care has had a tremendous influence on the way in which women have experienced birth in the United States. Prior to the twentieth century most births occurred at home, with associated familiarity and emotional support by family and friends. Unfortunately the positive effects of familiar surroundings and emotional support were offset by high rates of infant mortality, maternal deaths, and subsequent ill health.

From the early 1900's to the 1950's childbirth became a medical event. Urbanization, centralization of health care, and advances in medical technology greatly increased the safety of the mother and child during labor and delivery. However, along with this increased safety came social and psychological burdens. Childbirth took place among strangers in an unfamiliar environment, and women were placed into a more and more passive role in the birth process. Chemical analgesics and anesthetics began to play a larger and larger role in labor and delivery.

Childbirth preparation was pioneered in the early 1950's with the work of Grantly Dick-Read. Read's work was followed by the work of Lamaze, Kitzinger, Bing, Wright, Wessel, and LeBoyer in the 1960's and 1970's. Movements to make childbirth a more active and satisfying experience for women and

their husbands continued to increase in popularity through the sixties and seventies. These movements, along with research documenting adverse effects of excessive medication, reduced the level of medication administered during labor and delivery and seemed to humanize the environment for women in childbirth. Along with these movements, many obstetricians and hospitals responded to the needs of their patients by instituting programs which offered them the opportunity to participate in formal physical and emotional preparation for childbirth.

The particular methods of such programs as well as those of the various prepared childbirth movements are detailed in Chapter II. However, the aim of these methods was to enable the mother to experience labor and delivery as a psychologically and emotionally rewarding experience, as well as one which was physically safe for herself and the child.

From its beginning, childbirth preparation met with mixed reactions. It has been acclaimed as one of the most significant advances of modern medicine (Chertok, 1969) and as a primitive and medically unacceptable practice (Reid and Cohen, 1950).

In theory, the principles behind childbirth preparation are logical and clear-cut. Education and information on the birth experience should reduce apprehension of childbirth. Physical exercises, relaxation techniques, breathing techniques, as well as distraction measures should aid in the

alleviation of pain or discomfort perceived during labor and delivery. This non-pharmacological analgesia (psychoanalgesia) may be substituted for, or at least substantially supplement the use of, chemical analgesics or anesthetics.

Advantages of childbirth preparation would theoretically not be limited to physiological benefits. Research has shown that the emotional state of the mother during pregnancy has an effect on the delivery process which may include prolonged labor, birth complications, and abnormalities in childbirth (Engstrom, Geijerstam, and Holmber, 1964; McDonald, 1963; and Davids and DeVault, 1962). Successful preparation for childbirth programs seem to improve attitudes toward childbirth as well as enhance the emotional state.

In this era of family-centered obstetric care during which both women and their partners desire a more active role in the birth process, it is important to evaluate as scientifically as possible the value of this concept of preparation for childbirth.

I. PURPOSE

The purpose of this study was to examine childbirth preparation to determine if this training had an influence on selected physiological aspects of childbirth and fetal outcomes, and to determine the influence of this training on maternal attitudes to pregnancy and parturition.

II. STATEMENT OF THE PROBLEM

The problem of this investigation was to determine if formal childbirth preparation had any influence on the physical health of the mother and/or the newborn, and if the mother's attitudes toward pregnancy and delivery were influenced by this preparation for childbirth.

This study was designed to answer the following questions:

1. Does formal childbirth preparation make a difference in selected physiological aspects of labor and delivery?
2. Does formal childbirth preparation make a difference in maternal attitudes toward pregnancy, labor, and delivery?
3. Does formal childbirth preparation influence the physical health of the newborn?

III. NEED FOR THE STUDY

The need for a closer examination of childbirth preparation was drawn from the lack of consensus of opinion regarding this practice and its benefits for mother and/or child. Although experiencing an increase in popularity and acceptance by both parents and physicians, childbirth preparation is still far from becoming a dominant factor in obstetrics. Members of the medical profession as well as those educators involved with health education are very concerned with improving the quality of an individual's health.

There is a need to determine if childbirth preparation

provides any objective benefits to either mother or infant (Charles, Norr, Block, Meyering, and Meyers, 1978). Any strategy which would improve the physiological or psychological aspects of pregnancy, labor, and delivery would have to be viewed as a valuable tool by both the medical and educational communities. This study was needed to objectively evaluate the potential benefits of formal childbirth preparation.

IV. HYPOTHESIS

It was hypothesized that those individuals involved with formal childbirth preparation would demonstrate more positive factors on selected physiological aspects of labor and delivery and more positive attitudes toward pregnancy, labor, and delivery than those not involved with formal childbirth preparation.

V. BASIC ASSUMPTIONS

1. The information contained within patient records was accurately recorded.
2. The participants in the study responded to the Maternal Attitudes to Pregnancy Inventory (MAPI) truthfully and to the best of their ability.

VI. DELIMITATIONS

The following were the major delimitations of this study:

1. The physiological data collected were from private

patient records housed at The University of Tennessee Memorial Hospital and St. Mary's Hospital on women who delivered their child between March 1, 1980 and May 31, 1980.

2. Only women who delivered their child vaginally (not by Caesarean section) were included in this study.

3. Only women who delivered a single term child (not multiple births) were included in this study.

4. Only women who delivered a live infant (not still-born) were included in this study.

5. Only primiparous women (those women having their first child) were included in this study.

VII. LIMITATION

1. The individual variations of obstetrical treatment procedures of different physicians was seen as a limitation of this study.

VIII. DEFINITIONS

1. Abruptio Placenta--premature detachment of a normally situated placenta.

2. Analgesia--partial loss of sensation to pain.

3. Anesthesia--total loss of sensation in a part or in the body generally.

4. Antepartum--before labor or childbirth.

5. Apgar Score--an indication of the general health of an infant at birth. A numerical value between 0 and 10

which is assigned to the infant at birth based on heart rate, respiratory effort, muscle tone, reflexes, and color (Flowers, 1967). It should be noted that the Apgar Score is a subjective evaluation of the condition of the infant at birth and does not always reflect the condition of the child in the neonatal period.

6. Childbirth Preparation--any formal structured course of instruction on childbirth which is utilized to improve the experience of the birth process. This includes instruction on childbirth preparation as expounded by Lamaze, Read, Kitzinger, Bing, Wright, Wessel, and LeBoyer, as well as preparation for childbirth classes offered by St. Mary's Hospital and The University of Tennessee Hospital.

7. Effacement--the flattening out of the neck of the uterus.

8. First Stage Labor--begins with cervical dilation and ends when the cervix is fully dilated (usually 10 centimeters) (Curtis and Corales, 1977).

9. Intrapartum--during labor or delivery.

10. Multigravida--a pregnant women who has been pregnant before.

11. Multipara--a women who has had two or more offspring.

12. Non-Prepared Childbirth--the birth of a child with no formal structured course of instruction.

13. Placenta Previa--condition in which the placenta is implanted in the lower segment of the uterus, extending to

the margin of the internal opening of the cervix or partially or completely obstructing the opening.

14. Postpartum--after labor and childbirth.

15. Preeclampsia--the development of hypertension with proteinuria or edema, or both, due to pregnancy.

16. Prepared Childbirth--the same as childbirth preparation.

17. Primigravida--a woman who is pregnant for the first time.

18. Primipara--a woman who has had only one offspring.

19. Psychoprophylaxis--mental prevention of pain.

20. Second Stage Labor--begins when the cervix is fully dilated (usually 10 centimeters) and ends when the baby is delivered (Curtis and Corales, 1977).

21. Selected Physiological Aspects--the amounts and type of medication used, duration of labor, general health of the infant as measured by the Apgar Score, weight of the infant at birth, the incidence of spontaneous deliveries, and duration of the hospital stay.

22. Spontaneous Delivery--delivery of an infant vaginally (not Caesarean) and without the use of obstetrical forceps.

23. Third Stage Labor--begins with the delivery of the baby and ends with the delivery of the placenta (Curtis and Corales, 1977).

CHAPTER II

REVIEW OF RELATED LITERATURE

The literature reviewed was divided into three broad sections: 1) a description of the various forms of prepared childbirth, 2) physiological aspects of prepared childbirth, and 3) psychological aspects of prepared childbirth. The first section provides information on childbirth preparation methods such as psychoprophylaxis, as seen in the Lamaze method and others, the Read method of childbirth with his fear-tension-pain triad theory, the LeBoyer method of childbirth without violence, and the various forms of hypno-suggestive methods of childbirth preparation.

The second section examines childbirth preparation in relation to such physiological and obstetrical variables as amount of medication (analgesics and anesthetics), duration of first and second stage labor, incidence of spontaneous deliveries, incidence of obstetrical complications, amount of blood loss, and the general health of the infant as measured by the Apgar Score.

The third section of the reviewed literature examines the psychological aspects of prepared childbirth. Among the psychological aspects are such variables as anxiety resulting from labor and delivery, attitudes of the mother towards the birth experience, the feeling of enjoyment associated with childbirth, and the solidarity of the bond between

mother and infant. Some instruments used to measure maternal attitudes toward pregnancy and delivery, such as the Institute for Personality and Ability Testing (IPAT) Anxiety Scale Questionnaire and Maternal Attitudes to Pregnancy Inventory (MAPI) were examined.

I. FORMS OF PREPARED CHILDBIRTH

Forms of prepared childbirth may differ in their philosophy, techniques, strategies, and complicacy. Yet their ultimate intention is to, in some way, improve the experience of childbirth. One of the best known and most widely used forms of childbirth preparation is a psychoprophylactic method of prepared childbirth known as the Lamaze method. While Dr. Fernand Lamaze bears the name of this method, he did not invent it. The Lamaze method of psychoprophylaxis (mental prevention of pain) is based on the work and study of the Russian scientist Ivan Pavlov (Chabon, 1966). One of the fundamental principles of Pavlovian physiology is the theory of the conditioned reflex based on the idea of temporary connection (Chertok, 1959). The way that a person reacts to their environment is dependent upon two sets of reflexes, the absolute or unconditional reflexes, and the temporary or conditioned reflexes. The absolute or unconditioned reflexes form a permanent nervous connection between a given stimulus and a particular action. This can be seen when your leg jumps when the doctor hits

your knee with a hammer, or your hand pulls back when you grab a hot pan. These reflexes are inborn, permanent, and controlled by the subcortical centers of the brain.

The temporary or conditional reflexes form a temporary nervous connection between certain events in the environment and a particular action. This can be seen in one of Pavlov's most famous experiments when he caused dogs to associate the ringing of a bell to presentation of food, therefore producing salivation. These reflexes are acquired, temporary, and situated in the cortex of the brain.

To better relate this mechanism to the control of pain in childbirth, two experiments will be cited dealing with conditioned reflexes (Chertok, 1959). When an electric shock was applied to a dog's paw, the dog exhibited a defense reflex. For several days the electric shock was given along with food. Gradually, the defense reflex became weaker and weaker, and salivation began to occur with the shock. Eventually the shock by itself produced salivation with no sign of pain. The painful stimulus of shock had been transformed into the signal for the salivary reflex.

The other experiment showed that pain could result and be eliminated by conditioning in human beings. A human subject was able to effectively block the sensation of pain as well as perceive pain which was not really there, simply by verbal instruction. This verbal analgesia, as will be shown later, is a cornerstone in many forms of prepared childbirth.

Based on this early work of Pavlov, other scientists began to make their contributions. The Russian scientist, Micolaiev, made the first physiological analysis of pain in childbirth in 1936 (Lamaze, 1970). In the same year, Micolaiev coined the name psychoprophylaxis. In 1950, a World Congress of Gynecology was held in Paris, where Professor Micolaiev discussed the conditioned-reflex training of preparing women for birth (Chabon, 1966). A French obstetrician, Fernand Lamaze, was so very impressed with what he saw he joined a French delegation to the Soviet Union one year later. Dr. Lamaze heard Micolaiev, along with Velvosky and Platonov, explain the principles of the psychoprophylactic method and present results of its experimental application. Dr. Lamaze also observed several deliveries conducted with psychoprophylactic techniques. He returned to France determined to implement this method there. He introduced the psychoprophylactic method at the Maternite du Metallurgiste (Metal Workers Polyclinic) in Paris (Lamaze, 1970). It became very popular, and with the backing of the Metal Workers Union, Lamaze was able to introduce the method to women throughout France and much of Europe and South America.

In the United States, however, psychoprophylaxis had not made an impression. In 1959 this was changed when Marjorie Karmel, an American woman who was delivered with psychoprophylaxis by Dr. Lamaze in Paris, wrote a book about

her experiences titled Thank You, Dr. Lamaze (Karmel, 1959). The book triggered a tremendous response, and psychoprophylaxis began to gain popularity. Mrs. Karmel also formed, in conjunction with Dr. Benjamin Segal and Mrs. Elizabeth Bing, an organization devoted to the propagation of psychoprophylaxis throughout the United States (Tanzer, 1972). The American Society for Psychoprophylaxis in Obstetrics (ASPO) was founded in 1960.

Various forms of psychoprophylaxis contain similar yet diversified procedures. As a general rule, psychoprophylactic training will include all or a portion of the following (Huprich, 1977): 1) female anatomy and physiology relating to childbirth, 2) information on emotions relating to childbirth, 3) clarification of myths about pregnancy and childbirth, 4) physical exercises to prepare the body for childbirth, 5) instruction on how to relax muscles during childbirth, 6) breathing techniques used during childbirth, 7) function of the husband (coach) in labor, 8) comfort measures such as physical aids and positions, 9) instruction on medications used with childbirth and their various effects, 10) information on the technique for pushing used in delivery, 11) instruction on ways to handle various situations which might come up during pregnancy, labor, and delivery, 12) the typical routine for the hospital, labor room, and delivery room, and 13) a film showing the actual birth of a child using psychoprophylaxis.

The actual methods used in the various forms of psychoprophylaxis are very similar, so for distinction I will examine the procedures used in the Lamaze method of psychoprophylactic childbirth (Huprich, 1977). The Lamaze childbirth course usually consists of 6 to 8 weekly sessions which total about 12 hours of instruction. It is desired that the course begin around the seventh month of pregnancy when motivation is high. It is desired that husband and wife attend classes together, although mothers may attend alone or bring another person to act as a coach during labor or delivery.

With the Lamaze method labor is broken down into three phases. The early phase consists of mild contractions which occur anywhere from 5 to 20 minutes apart. During this phase the cervix usually dilates to about 3 centimeters and effacement is usually completed. In the active phase more intense contractions occur anywhere from 3 to 5 minutes apart. During this phase dilation of the cervix is from 3 to 7 or 8 centimeters. During the transitional phase very intense contractions occur anywhere from 90 to 120 seconds apart. During this phase full cervical dilation (10 centimeters) is accomplished.

Relaxation is suggested as the only technique to use during the early phase of labor. During this time the mother should select and maintain a point of concentration, called a focal point. This is one of the distractive

measures. The focal point may be a black dot on the wall, a picture, or any object the mother chooses.

Toward the end of the early phase of labor the relaxation techniques may no longer prove effective. At this point breathing techniques may become necessary for the mother to stay in control. There are several breathing techniques which the mother may use according to the severity of her contractions. In all of the breathing techniques it is important for the mother to take a deep cleansing breath, inhaling through the nose, and exhaling through the mouth. This is done both before and after each contraction, and ensures a good oxygen and carbon dioxide exchange as well as aiding in relaxation.

The first breathing pattern is called slow chest breathing. With this pattern only six to nine intercostal respirations are taken per minute as compared with the 14 to 16 respirations an adult normally takes per minute. These respirations should be continuous and rhythmic, taken in through the nose and exhaled through the mouth. Along with slow chest breathing the mother performs effleurage, a light massage of the abdomen. This is another distraction technique. The effleurage feels good to the mother, acts as another point of concentration, and aids in relieving tension in the abdomen.

When the slow chest breathing is no longer effective, the second breathing pattern is begun. The second breathing

pattern is called accelerated breathing. It prevents the diaphragm from interfering with the working uterus by involving light, shallow respirations. The breathing is begun slowly and gradually accelerated until the contraction reaches its peak. The breathing is gradually slowed as the contraction decreases. Effleurage may be continued if needed.

The third breathing pattern is called the 4-6-8 pant blow method. This breathing pattern may be needed toward the end of the active labor, the beginning of transition, or maybe not at all. With this breathing pattern, four, six, or eight shallow rapid breaths are taken, followed by another quick inhalation and a quick blow exhalation. Effleurage is discontinued during this pattern.

As labor continues to the delivery stage, the Lamaze mother continues with her appropriate breathing pattern which functions to keep the diaphragm down and the abdominal capacity decreased. The knowledge of the technique for pushing is utilized at the proper times until the baby is born.

While the Lamaze method of psychoprophylaxis is the most widely known model, there are other variations of the psychoprophylactic method such as those by Kitzinger (1967) Bing (1961), Wright (1966), and Wessel (1963).

Another well-known method of childbirth preparation is that method promulgated by the Englishman, Grantley Dick-Read

He formulated his philosophy based on a method of natural delivery (Read, 1959). Read developed his interest in natural childbirth when he offered anesthesia to a very poor patient, and to his surprise she refused. When he later asked her about this, she replied that it did not hurt and asked if it was supposed to. This led Read to realize that there was no law in nature to justify the pain of childbirth. He concluded that childbirth was a noble act and a beautiful experience which should not be associated with pain. He observed women from other cultures give birth in which there appeared to be no sign of pain. This served to reinforce his belief that childbirth should not be painful.

Read based much of his philosophy on what he called the fear-tension-pain syndrome (Read, 1959), which simply states that fear produces tension and tension produces pain. Related to childbirth he stated that through the ages fear and anxiety were introduced into pregnancy and childbirth. Fear and anticipation of pain resulted in natural protective tensions in the body. As the protective tensions are aroused there is a disruption of the natural progression of childbirth, resulting in pain.

From this theory it would seem that all that is necessary to eliminate pain from childbirth would be to eliminate fear and tension. This is just what Read attempted to do. Since fear and ignorance are so closely related, Read

instituted courses in education for childbirth so the mother could understand and be prepared for what was happening and what was yet to happen in the course of her pregnancy.

Several methods were involved in this education (Chertok, 1967). Didactic methods were involved, which included teaching the women anatomical and physiological facts relating to the act of childbirth. Physiotherapeutic methods were involved, which included methods of relaxation, antenatal physical exercises, and respiratory exercises. Psychotherapeutic methods were also involved, which included familiarizing the pregnant woman as much as possible with the processes of childbirth, thus creating an atmosphere of confidence.

Read felt that childbirth was much more than just a physical function. He attached to childbirth many spiritual and emotional manifestations. This can be seen in the following quote from Read (1959):

Today the birth of a child is an emotional experience which brings with it all the noblest and most lovable qualities of men, women, and children. It unearths the fund of tenderness, companionship, and sympathetic understanding that smooths our social structure and brings confidence to replace suspicion. There is no greater joy than that of a woman who sees her baby born, hears its greeting, and holds it in her hands while it is still linked to her body by the avenue through which its life-blood surged from the selective source within her womb. The miracle by which new life is given to us has gained our highest respect, and we have seen, in awe, women pass from the physical to the spiritual comprehension of the magnitude of human love Childbirth is not a physical function. The drama of the physical manifestations has blinded its observers to the truth--the birth of a child is the ultimate phenomenon of a series of spiritual experiences, from fantasy to fact and from fact to fruition (p. 26).

Another method of childbirth preparation is that of Frederick LeBoyer. LeBoyer described his method of childbirth and the philosophy behind it in his book, Birth Without Violence (LeBoyer, 1975). With the LeBoyer methods of childbirth, the concept is to ease the baby's transition into the world by eliminating environmental factors that may be upsetting to the infant. LeBoyer babies experience a beginning of life very different from those babies of traditional childbirth. LeBoyer's method includes such innovations as: 1) the lights of the delivery room are dimmed and no one speaks above a whisper, 2) at birth the baby is placed on the mother's abdomen, 3) the doctor and mother gently massage the baby as they wait for the umbilical cord to stop pulsating before it is severed, and 4) the baby is bathed in a basin of warm water. This method is fairly diverse from the others found in this section. This method was included because the mother receives a greater amount of attention at childbirth than would a mother with no form of childbirth preparation. This is recognized as a psychological strategy of prepared childbirth by Stevens (1976), which will be discussed later. Because of this influence, the mental state of the mother may be affected, thus having a consequence on the birth experience. Other information on the LeBoyer method may be derived from Salter (1978), Englund (1974), and Nelson, et al. (1980).

The final method of preparation for childbirth to be included in this review is that of the hypno-suggestive method. This method met with limited success at best. Chertok (1969) states that attempts at hypnotic analgesia were begun in Russia about 1923 and in the United States in 1943. Nowhere did this technique lead to mass application.

DeLee and Greenhill (1943) wrote that hypnosis has been used for some time in obstetrics and should be used even more often than it is. They brought out the valid point that even if complete hypnosis is not resorted to, the physician should remember that repeated suggestions can accomplish a great deal in labor, particularly for the relief of fear as well as the relief of pain.

Kroger and DeLee (1943) considered hypnosis as a "synaptic ablation" which effectively blocks the somatic and autonomic pathways that transmit afferent pain impulses. They conclude that the hypnoidal state in childbirth is a safe amnesic, analgesic, and anesthetic agent. They found no adverse effects on the mother or baby.

While it was brought out that spectacular results can be obtained in some patients by the use of hypnosis during parturition, Abramson and Heron (1950) also expressed some reservations on the method. They found that it was possible to put only about 20 percent of normal adult individuals into the deepest hypnotic condition, in which the best results could be attained. A big problem in the use of

hypnosis was seen in the time and effort which were required on the part of the physician to give the prenatal training, as well as difficulties arising from hospital staffs not trained to deal with patients in the hypnotic state.

II. PHYSIOLOGICAL ASPECTS OF PREPARED CHILDBIRTH

One of the primary aspects of concern relating to childbirth is the involvement of pain with the birth experience. Read (1949) concluded that there was no physiological evidence that childbirth should be painful or that pain can serve any useful purpose in labor. The perception of pain is not as clearly understood as many other human sensations. Pain is seen to result from intense stimuli such as noise, heat, cold, light, or pressure which are strong enough to cause, or appear to cause, tissue damage. The human nervous system is equipped with specialized pain receptors which respond to these stimuli and alert the central nervous system of impending or ongoing tissue damage (Stevens, 1976). This pain system can be seen as a desirable adaptation because it enables us to avoid or minimize bodily damage.

There are situations, however, where pain occurs without any recognizable benefit. This could include prolonged untreatable pain of some cancers, phantom limb pain, pain which continues after injury has ended, pain due to misinterpreted stimuli, pain due to fear or anxiety, and pain generated by the mind when there is no injury. In many of

these instances, the human perception of pain is seen to be somewhat dependent on the mental state of the individual. On this foundation, many of the strategies involved with prepared childbirth are based.

Pain in childbirth is seen to be initiated with the onset of uterine contractions. Javert and Hardy (1950), however, did not find uterine contractions to be responsible for the pain of labor. They base their findings on the following reasons: 1) pitocin-induced contractions are rather painless until the cervix begins to dilate, 2) Braxton Hicks contractions are also rather painless until the cervix begins to dilate, 3) uterine contractions during caudal anesthesia cause little pain due to the fact that caudal anesthesia blocks the nerves going to the cervix, and 4) after presacral neurectomy the uterine contractions are relatively painless. From their research, Javert and Hardy postulate that pain in the first stage of labor is due to cervical dilation, with the stimuli being carried by the autonomic nervous system. In the second stage of labor, pain is due to perineal dilation, and is carried by somatic sensory pudendal nerves. They concluded that prepared childbirth had little, if any, effect on the pain intensity in labor. Prepared childbirth was seen as having some positive influence on the reaction pattern of the patient, but not in a decrease of the actual pain experienced.

In a study using laboratory pain stimuli, Stevens and

Heide (1977) found that prepared childbirth techniques were effective in decreasing pain experience and in increasing pain endurance. Their findings demonstrated that prepared childbirth strategies had an actual analgesic effect, and that pain was not reduced because of motivational or other factors.

In a comparative study using prepared childbirth deliveries and non-prepared deliveries, Charles, Norr, Block, Meyering, and Meyers (1978) found prepared childbirth deliveries associated with significantly lower levels of pain.¹ Similar findings were related by Beck and Hall (1978), Mulcahy and Janz (1973), and Cogan (1975).

While it is recognized that pain is often associated with childbirth, enjoyment is also often related. Although high levels of pain would seem to reduce the possibility of enjoyment, a number of women experience both high enjoyment and high pain (Charles, Norr, Block, Meyering, and Myers, 1977). But it was brought out that women with low levels of pain do not necessarily have high levels of enjoyment.

One strategy which prepared childbirth methods use in the prevention of pain perception is breathing techniques. These breathing techniques may vary from a forceful blowing respiration pattern to holding the breath for a period of time. The primary effect of these breathing strategies

¹Unless otherwise indicated, significant differences will reflect the level of .05 or better.

seems to be a distraction measure. Ulin (1968) and Vellay (1965) offer a more detailed account of these respiratory strategies.

Associated with these breathing exercises is the concern regarding possible adverse effects of hyperventilation during labor. Moya, Morishima, Shnider, and James (1965) and Wulf (1964) have reported on the dangers of hyperventilation to the fetus, while Crawford (1966) and Coleman and Lond (1967) reported no adverse effects of hyperventilation on the fetus. More recent studies by Miller, Petrie, Arce, Paul, and Hon (1974) and Scott and Rose (1976) indicate that the breathing techniques used during labor by prepared childbirth patients are not harmful to either the mother or the infant.

Traditionally, the method of handling pain with childbirth was to combat it with various types of pain medication. While this medication is effective for pain control of the mother, considerations should be made for the health and safety of the fetus. Moya and Thorndike (1962) and Flowers (1967) document the transfer of various types of analgesia and anesthesia from the mother to the fetus. Cohen and Olson (1970) report that the transfer of drugs from the mother into the fetus occurs mainly via the placenta, but it may also occur via the amniotic fluid-to-fetus route. They state that the fetus and the newborn infant may be affected adversely by any therapeutic agent given to a

woman in labor.

From these reports it would seem that the less medication a woman receives during labor and birth, the greater the health benefits to both mother and infant. This is one of the objectives of prepared childbirth. With preparation for childbirth, pain medication would certainly not be prohibited. If the mother and/or the attending physician saw a need for pain medication, it would be administered. But under the theory of preparation for childbirth there would be less pain, therefore, less need for medication.

A study of 2,000 deliveries under a training for childbirth program showed a reduced need for medication during labor and delivery of those women involved with the preparatory program (Thoms and Karlovsky, 1954) and (Thoms and Wyatt, 1951). Matched comparison studies of prepared childbirth deliveries and non-prepared deliveries showed a significant reduction in medication used by mothers involved with prepared childbirth (Charles et al., 1978) (Scott and Rose, 1976). Similar results were reported by Yahia and Ulin (1965); Van Auken and Tomlinson (1953); Laird and Hogan (1956); Goodrich and Thoms (1948); Huttel, Mitchell, Fischer, and Meyer (1972); Miller (1961); and Klopfer, Cogan, and Henneborn (1975).

On the other hand, Davis and Morrone (1962) found that women involved in a prepared childbirth program received medication earlier in labor as well as receiving a greater

amount of medication than those women not involved in a prepared childbirth program. Another study reported that prepared childbirth mothers received less medication than non-prepared childbirth mothers, but not a significantly less amount ($P > .10$) (Hughey and McElin, 1978).

In relation to complications of childbirth, after evaluating almost 5,000 deliveries (prepared childbirth) over a nine year period, Miller (1961) concluded that prepared childbirth deliveries were much less complicated. His percentage of operative deliveries was less than five. Thoms and Karlovsky (1954) also noted fewer operative deliveries in those involved with childbirth preparation.

Charles et al. (1978), however, reported no differences between prepared and unprepared women in the proportion of those having normal presentations and in those with any complications of labor, including placenta previa, abruptio placentae, preeclampsia, prematurity or fetal distress. Likewise, it was seen that maternal antepartum and postpartum complications as well as the number of patients with dysfunctional labor were comparable in both the prepared and non-prepared childbirth groups (Scott and Rose, 1976).

Thoms and Karlovsky (1954) reported that blood loss during delivery was decreased since their inauguration of a prepared childbirth program. They attributed this in part to shorter labors and lessened use of analgesics and anesthetics. The average loss of blood was also decreased

in a long term evaluation (nine years) of a preparation for childbirth program (Miller, 1961).

Laird and Hogan (1956), in a two-year study, reported that the blood loss in patients involved with prepared childbirth was approximately the same as that in the group not involved. Hughey and McElin (1978) reported slightly less postpartum hemorrhage in a prepared childbirth group, but the difference was not significant ($P > .10$).

With regards to spontaneous deliveries, Scott and Rose (1976), Laird and Hogan (1956), and Hughey and McElin (1978) found that mothers involved with prepared childbirth had a higher percentage of spontaneous vaginal deliveries than did mothers not involved with prepared childbirth. This might be related to variations in patient cooperation at the time of delivery, or to the increased use of conduction anesthesia in the non-prepared group.

The duration of labor would seem to be a variable which preparation for childbirth could reduce. This view is substantiated by Thoms and Karlovsky (1954), Yahia and Ulin (1965), and Miller (1961). Leonard (1973) and Van Auken and Tomlinson (1955) also found that prepared childbirth reduced the total number of hours in labor.

One of the best indicators of the general health of an infant at birth is known as the Apgar Scale. This is an evaluation of a newborn infant's physical status by assigning numerical values to particular criteria (see Table 1).

TABLE 1
METHOD OF APGAR SCORING*

Sign	Score		
	0	1	2
Heart rate	Absent	Slow--less than 100	Faster than 100
Respiratory effort	Absent	Weak cry, hypo-ventilation	Good strong cry
Muscle tone	Limp	A little flexion of extremities	Well-flexed
Reflexes	No response	Some motion	Good cry
Color	Blue-pale	Body pink, extremities blue	Completely pink

*From Obstetric Analgesia and Anesthesia by Charles E. Flowers, p. 6 (Flowers, 1967).

The infant is rated from 0-2 on each of the five signs, with the sum of the values representing the overall Apgar Score.

It should be noted that the Apgar Score is a subjective evaluation of the condition of the infant at birth and does not always reflect the condition of the child in the neonatal period.

The Apgar measurement applied at one minute, five minute, and ten minute intervals after delivery in a study comparing prepared childbirth deliveries to non-prepared deliveries indicated that the state of the newborns did not differ between the two groups. Scott and Rose (1976) and Charles et al. (1978) also found that there did not seem to be any effects of preparation on the condition of the infant, as measured by the Apgar Scores, between prepared and non-prepared deliveries.

III. PSYCHOLOGICAL ASPECTS OF PREPARED CHILDBIRTH

As was previously stated, one of the primary aspects of concern relating to childbirth is the involvement of pain with the birth experience. Prepared childbirth, through the use of certain psychological strategies along with some physiological techniques (breathing, exercises, etc.), attempts to obstruct the perception of this pain. Stevens (1976) has isolated and identified five major psychological strategies which have been found effective in reducing pain perception. These strategies include the following:

1) systematic relaxation, 2) cognitive control, which consists of dissociation strategies and interference strategies such as distraction and attention focusing, 3) cognitive rehearsal, 4) Hawthorn effect, and 5) systematic desensitization.

With systematic relaxation an individual tightens

various muscle groups, holds the tension and concentrates on the relaxation. The process moves to different muscle groups and the sequence is repeated. The goal with systematic relaxation is to relax all the muscles of the body in order to produce a mental state of minimal anxiety. In this mental state an individual would supposedly be less fearful of pain, and the mind would actually decrease its awareness of the painful sensation. As a result, the individual would be able to endure pain longer.

With cognitive control an individual involves the mind in mental activities other than the awareness of the incoming pain sensation. Two major types of cognitive control were identified, the dissociation technique and the interference technique. The dissociation strategy consists of concentrating attention on a non-painful characteristic of the pain stimulus. The individual attempts to dissociate one of the real characteristics of the stimulus from the painful characteristics.

Interference strategies for the control of pain involve two forms of cognitive control, distraction and attention focusing. Distraction strategies consist of passive, perceptual interference using distracting stimuli such as noise, music, or visual slides. Attention focusing involves an active, purposeful activity for focusing upon another mental process.

Stone, Demchik-Stone, and Horan (1977) give an

interesting account of attention focusing when they examine the use of in-vivo emotive imagery as a replacement for focal-point visualization in the psychoprophylactic method of prepared childbirth. In-vivo emotive imagery consists of the generation of positive emotions which are used to block anxiety and/or pain. This was in comparison to psychoprophylactic focal-point visualization as described in section I. The results of the study showed no significant differences between in-vivo emotive imagery and psychoprophylactic focal-point visualization in the control of anxiety and/or pain.

Continuing with the psychological strategies identified by Stevens (1976), we come to cognitive rehearsal. This strategy requires that an individual be given a detailed description of the upcoming painful experience. This advance knowledge of the impending painful experience allows an individual to rehearse particular fear images in such a way as to reduce anxiety, and as a result, increase pain tolerance. Related to prepared childbirth, the expectant mother would receive subjective (maybe even experiential) information on the prepared childbirth experience and what should be expected. This subjective information would be much more effective achieving cognitive rehearsal than purely objective information.

The Hawthorn effect represents a general perception that an individual which has received more or special

attention related to task will be more successful in performing that task. As a school teacher this may be observed in the classroom. The same theory can be applied to prepared childbirth. The childbirth educator and spouse (or coach) serve to provide extra attention and time to the pregnant mother both during childbirth preparation classes and during labor and delivery. This extra attention would contribute to the mother's successful childbirth experience by improving the effectiveness of her psychological strategies for pain management.

Systematic desensitization is seen as a combination of systematic relaxation, cognitive rehearsal, cognitive dissociation, and the Hawthorn effect. The technique would begin with establishing a complete state of physical and mental relaxation in an individual (systematic relaxation), establishing a good rapport and an obvious concern for the individual (Hawthorn effect), and over a period of time, discussing particular aspects of a specific fear stimulus (cognitive dissociation). The individual would be encouraged to use cognitive rehearsal to rid themselves of the fear stimulus.

Prepared childbirth classes could be seen as a type of systematic desensitization. The particular fear stimulus in this case would be fear of childbirth pain and labor pains.

Kondas and Scetnicka (1972) examined systematic

desensitization as a method of preparation for childbirth. Using pregnant women with high levels of situational fear as subjects, they found systematic desensitization very effective in elimination of fear, anxiety, and pain.

One of the advantages of childbirth preparation espoused by many prepared childbirth organizations is a closer bond which is produced between mother and baby. It has been observed that prepared women experience a higher level of awareness at delivery, which in turn is strongly associated with positive reactions to the infant (Doering and Entwisle, 1975).

Goodrich and Thoms (1948) conclude that as an advantage to prepared childbirth there is an immediate and close bond established between mother and child. They add that this bond provides for a mother-child relationship which can have a deep and lasting effect on their mutual adjustment in the future.

Anxiety can be seen as a potential problem relating to the childbirth experience. Anxiety could be defined as a state of being worried or concerned over what may happen. Zax, Sameroff, and Farnum (1975) examined the relationship of prepared childbirth to anxiety. The anxiety scale for the Institute for Personality and Ability Testing (IPAT) was the instrument employed. This is a pencil-and-paper scale consisting of 40 items through which the subject is asked to relate current feelings. Each item receives a

score of zero, one, or two, with a high score indicating high anxiety. Contrary to expectation, this study found that prepared childbirth did not reduce anxiety in expectant mothers as measured by the IPAT anxiety scale.

Using the Spreen Anxiety Scale, Huttel et al. (1972) found no differences in anxiety between prepared childbirth and non-prepared childbirth mothers.

Thoms and Goodrich (1949) concluded that prepared childbirth reduced anxiety by increasing the confidence of the patient (scale not given).

It is questioned as to whether prepared childbirth has an effect on attitudes toward pregnancy. The Maternal Attitude Toward Pregnancy Instrument (MAPI) was developed to answer this question (Blau, Welkowitz, and Cohen, 1964). The MAPI was developed from a retrospective psychiatric and psychologic study of mothers of premature infants (Blau, Slaff, Easton, Welkowitz, Springarn, and Cohen, 1963).

This is a pencil-and-paper instrument consisting of 48 statements which the subject is asked to indicate strong agreement, agreement, disagreement, or strong disagreement. Each item receives a score weighted from one to four, depending upon whether the item has a negative or positive factor loading. An overall test score is provided by combining individual item scores. The subject also receives four factor scores.

Factor I of the MAPI consists of 22 items, and reflects

feelings of well-being and acceptance of pregnancy, labor, and delivery in the absence of fear. Factor II consists of nine items which measure exaggerated feelings of well-being, as well as pride and positive feelings toward the child and physician. Factor III consists of four items which reflect particularly strong concern about delivery and birth, desire to participate actively in the delivery, and positive interest in breast feeding. Factor IV, consisting of 11 items, reflects positive attitudes toward the baby and a lack of undue concern about its sex and normality. High MAPI scores are indicative of the more positive attitudes.

Because attitudes toward pregnancy were seen to be related to attitudes toward childbearing, the factorial characteristics of the MAPI were explored within a reference framework of the scales of the Parental Attitude Research Instrument (PARI) developed by Schaefer and Bell (1958). Studies carried out at the Mount Sinai Hospital in New York indicated that the MAPI measured a specific aspect of the PARI, namely attitudes toward pregnancy (Welkowitz and Cohen, 1965). Reliability for the Maternal Attitude to Pregnancy instrument was demonstrated when the instrument yielded a Cronbach alpha reliability coefficient of 0.80 (Blau et al., 1964).

Utilizing the MAPI, Zax, Sameroff, and Farnum (1975) examined expressed attitudes toward pregnancy among prepared mothers and non-mothers. They reported that childbirth

training had no effect on expressed attitudes toward pregnancy as measured by the MAPI.

Leonard (1973) examined the selection tendencies of patients preferring prepared childbirth. He reported that the number of patients selecting preparation for childbirth increased as the age of the woman and her husband increased, as the educational level of the woman and her husband increased, and as the family income increased. A significant correlation was seen between childbirth preparation and more frequent planned pregnancy, desire to breast feed, and use of birth control. Leonard agreed with a statement from Davis and Morrone (1962) when they said:

Within the restrictions of this pilot study, it seems possible to conclude that the type of person who elects preparation is more important in determining its effect than the preparation itself (p. 1200).

This statement is refuted, however, by a study in which use or nonuse of prepared childbirth was not an elected choice. Huttel et al. (1972) relates a study in Germany where expectant mothers were randomly assigned to take training or not. None of these women had heard of prepared childbirth, nor had it been practiced previously in any hospital in the area. Therefore, motivation did not exist as a variable. Despite this fact, significant differences were found in length of labor, amount of medication required, patient's control and cooperation during labor and delivery, and positive feelings about the experience afterward. These

differences were seen to favor those expectant mothers assigned to the prepared childbirth group.

IV. CONCLUSION

Attempts to provide relief for the rigors of childbirth have made much progress since that day in 1847 when James Young Simpson made use of chloroform as a means of pain prevention in labor (Beck and Hall, 1978). In many instances, pharmacological pain interventions have been supplemented with or even replaced by various forms of psychological and physiological pain prevention strategies. These strategies can range from the South African techniques of abdominal decompression (Moir, 1973), to simply listening to music as a means of cognitive distraction.

While some of the prepared childbirth strategies went under the name of natural childbirth, this was in reality a misnomer. Chabon (1966) makes this quite clear when he makes the following statement:

In lower animals, birth patterns are instinctive, and therefore are "natural." Lower animals act and react as they were constructed to act and react. They have no ability to control or alter their behavior. They mate instinctively--their urge usually governed by hormones--and become pregnant. As the lower mammals approach term and its associated labor, nesting instincts are aroused and the pregnant animal selects a location for her delivery and gathers soft materials to make a comfortable nest in which to deliver her young. When labor comes along, the pregnant mammal repairs to her nest, delivers her young, bites the cord, cleans the young, puts them to her breasts, and eats the placentas. This is truly natural childbirth. The entire behavior pattern is unlearned and is repeated time after time in the same species in a predictable fashion (p. 24).

Preparation for childbirth is available to anyone who desires it. There is no special requirements needed to qualify as a participant. Many advocates of childbirth preparation wonder why more people do not take advantage of the benefits they offer. Bradley (1965) compares being pregnant and not learning about prepared childbirth to not knowing how to swim and being given nine months notice that you would be thrown into deep water. In both instances, a set amount of time is given to overcome a basic lack of knowledge and training.

Tupper and Halifax (1956) make a rather morbid analogy when they state that conditioning for childbirth does much the same that military training does for a soldier facing the rigors of battle. No one wants to die or suffer pain in battle. But with military training the soldier becomes so conditioned that he is able to face death and pain with fortitude, and to experience a sense of having proved his manhood.

A more accurate description is seen in the analogy by Bing (1961), comparing a reduced perception of pain, due to childbirth preparation, to a reduced perception of pain, due to concentration in an athletic contest. She stated the following:

Athletes, intensely engaged in a contest, can suffer ordinarily severely painful injuries without being immediately aware of either injury or the pain--the stimulus of good performance is so great that it evokes great concentration of the brain on an appropriate

response and reciprocally dampens the ability of the brain tissue to simultaneously perceive and react to other stimuli (injury and pain) (p. 2).

V. SUMMARY

The various forms of prepared childbirth were given close examination. Specific strategies as well as a historical perspective were included here.

The physiological aspects of prepared childbirth were investigated. The perception of pain and its impact on prepared childbirth was inspected. A detailed examination of various obstetrical factors in relation to prepared childbirth was carried out.

The psychological aspects of prepared childbirth were looked into. The five major psychological strategies forming a basis for childbirth preparation were examined. The relationship of anxiety and attitudes toward prepared childbirth were reviewed along with some specific measurement instruments.

Finally, some analogies by respected scholars in the field, along with some closing remarks were offered.

CHAPTER III

METHODOLOGY

I. OVERVIEW

The purpose of this study was to examine formal childbirth preparation to determine if this training had an influence on selected physiological aspects of childbirth, and to determine the influence of this training on maternal attitudes to pregnancy and delivery. This study sought to answer the following questions:

1. Does formal childbirth preparation make a difference in selected physiological aspects of labor and delivery?
2. Does formal childbirth preparation make a difference in maternal attitudes toward pregnancy, labor, and delivery?
3. Does formal childbirth preparation influence the physical health of the newborn?

II. POPULATION PARAMETER

The population chosen for this study included all primiparous obstetric deliveries of private patients of the cooperating physicians at The University of Tennessee Memorial Hospital and St. Mary's Hospital between March 1, 1980 and May 31, 1980, with the following restrictions:

- 1) only women who delivered their child vaginally (not by Caesarean section) were included in the study, 2) only women who delivered a single child (not multiple births)

were included in the study, and 3) only women who delivered a live infant (not stillborn) were included in the study.

Only private patients were used in the study, as opposed to combining private patients and service (indigent care) patients, in an attempt to provide for a more homogeneous sample. From the medical records, patients within this population were identified as to their involvement or non-involvement with formal childbirth preparation measures.

III. SAMPLE SELECTION

The sample for this study was selected in the following manner: Inspection of the medical records provided the information to identify a population that met the previously mentioned restrictions. From the population of prepared and non-prepared primiparous mothers, a total of 30 prepared subjects were randomly selected for comparison with 30 non-prepared subjects. This random selection procedure was done using a random set of numbers (Hays, 1973).

IV. DATA COLLECTION

Physiological Data

The physiological aspects of labor and delivery under investigation in this study included the duration of first and second stage labor, general health of the infant as measured by the Apgar Score and birth weight, the amounts and type of medication administered to the mother during

labor and delivery, the incidence of spontaneous deliveries, and the duration of hospital stay. It was felt that these physiological variables would serve as the best indicator of any physiological differences between the matched childbirth preparation and non-preparation groups. All physiological data were recorded directly from the medical records onto prepared data collection sheets (see Appendix A).

Psychological (Attitudinal) Data

Data regarding attitudes toward pregnancy were collected with the use of the Maternal Attitude to Pregnancy Instrument (MAPI) (Blau, Welkowitz, and Cohen, 1964). This is a pencil-and-paper instrument consisting of 48 statements to which the subject is asked to indicate strong agreement, agreement, disagreement, or strong disagreement. Each item receives a score weighted from one to four, depending upon whether the item has a negative or positive factor loading. To counter acquiescence, the direction loading of the items was made to vary irregularly. An overall test score is provided by combining individual test scores.

The subject also receives four factor scores. Factor I reflects the feelings of well-being and acceptance of pregnancy, labor, and delivery in the absence of fear. Factor II measures exaggerated feelings of well-being, as well as pride and positive feelings toward the child and physician. Factor III reflects particularly strong concerns about delivery, and positive interest in breast feeding. Factor IV

reflects positive attitudes toward the baby and a lack of undue concern about its sex and normality. High MAPI scores are indicative of the more positive attitudes.

The Maternal Attitude to Pregnancy Instrument yielded a Cronbach alpha reliability coefficient of 0.80. Validity of the instrument comes from a comparison with the well-investigated and widely researched Parental Attitude Research Instrument (PARI) (Schaeffer and Bell, 1958). The MAPI was shown to measure a specific aspect of the PARI, namely the attitudes toward pregnancy (Blau et al., 1964; Welkowitz and Cohen, 1965).

Prior to mailing the MAPI to the subjects in this study, permission to contact the participants regarding this matter was received from the attending physicians in charge of the subjects (see Appendix B). The instruments with cover letters (see Appendix C) were then mailed to the selected samples of primiparous women involved with childbirth preparation, and primiparous women not involved with childbirth preparation.

V. STATISTICAL PROCEDURES

Statistical treatment of the data was designed to describe the data collected and to test the stated hypothesis. The Statistical Package for the Social Sciences (SPSS) was chosen to provide standardized statistical handling of data. Data from the data collection sheets were transferred

onto University of Tennessee Computer Center (UTCC) Data Sheets for computerization and subsequently keypunched onto computer cards. All computer computations were done using an IBM 3031 computer.

The data collected consisted of physiological and psychological data. For the physiological data, statistics were calculated to provide a comparison of the characteristics of the two groups (formal childbirth preparation and non-preparation). The measures of central tendency and variability calculated for each group included the mean, standard deviation, and range. The chi-square test was performed to determine whether observations constituted a departure from what would be expected by chance at a particular level of significance ($P \leq .05$). Analysis of variance test was also applied to determine the significance of the ratio of the variation of scores found to exist between the two groups (prepared and non-prepared) and within them.

The psychological (attitudinal) data were subjected to the Mann-Whitney U Test. This test was designed to determine whether the various ranked values for any given variable were equally distributed throughout both samples. Means and standard deviations of attitude scores by factors and total score were computed to indicate the direction of the attitudinal differences.

The multiple discriminant analysis procedure was also carried out to demonstrate the ability of the Maternal

Attitude to Pregnancy Instrument to discriminate members of one group from another based on the factors within the instrument.

CHAPTER IV

ANALYSIS OF THE DATA

I. INTRODUCTION

The purpose of this chapter is to present the analysis of the data. It is divided into three sections: 1) a description of the data, 2) an analysis of the physiological data, and 3) an analysis of the psychological (attitudinal) data.

II. DESCRIPTION OF THE DATA

The data consisted of information extracted from private patient hospital records as described in Chapter III, as well as information garnered from the Maternal Attitude to Pregnancy Instrument which was mailed to the subjects. Of the 60 questionnaires mailed, 47 were returned. Of these, one was found to be incomplete and was excluded. The 46 completed questionnaires represented a 77 percent rate of response. Of the 46 completed questionnaires, 23 were from the group involved with childbirth preparation and 23 were from the non-prepared group.

III. ANALYSIS OF THE PHYSIOLOGICAL DATA

The physiological data examined in the comparison of prepared deliveries to non-prepared deliveries included the following: the use or nonuse of forceps, the type of

anesthesia used (either conduction or local anesthesia), birth weight of the infant in ounces, Apgar Score, duration of labor in minutes, duration of hospital stay in days, and the amount of analgesia used in milligrams.

Table 2 provides frequencies of the discrete physiological data which consists of the use or nonuse of forceps and the type of anesthesia used for the two groups.

TABLE 2
DISTRIBUTION OF THE USE OR NONUSE OF FORCEPS AND TYPE
OF ANESTHESIA USED FOR THE PREPARED AND
NON-PREPARED GROUPS

	Prepared Group	Per- centage	Non- Prepared Group	Per- centage
Forceps Used	10	33.3	13	43.3
Forceps Not Used	20	66.7	17	56.7
Conduction Anesthesia	18	60.0	20	66.7
Local Anesthesia	12	40.0	10	33.3

There was little difference between the two groups on the use and nonuse of forceps and type of medication used. The prepared group had 10 cases where forceps were used, while the non-prepared group had 13. Eighteen subjects in the prepared group utilized conduction anesthesia, while 21 subjects in the non-prepared group did so.

Table 3 illustrates a summary of measures of central tendency and variability of the continuous physiological data from the prepared group. It was found that the mean birth weight of the infants in the prepared group was 123.4 ounces, which is just slightly over 7 pounds 7 ounces. The birth weights ranged from 6 pounds 0 ounces to 9 pounds 0 ounces. The average Apgar Score was 8.767, with scores ranging from 5 to 9.5. The duration of labor averaged 9 hours and 23 minutes, with a range of 3 hours and 32 minutes to 20 hours and 57 minutes. The duration of hospital stay ranged from 3 days to 9 days, with a mean of 4.30 days. Finally, the amount of analgesia used averaged 32.167 milligrams, with a range of no medication at all to 90 milligrams of medication.

Table 4 provides a summary of measures of central tendency and variability of the continuous physiological data from the non-prepared group. The birth weights of the infants in the non-prepared group ranged from 3 pounds 5 ounces to 9 pounds 13 ounces, with an average of just less than 7 pounds 6 ounces. The mean Apgar Score was 8.717, with a range of 6.5 to 9.5. The duration of labor ranged from 2 hours and 13 minutes to 17 hours and 28 minutes, with an average of 8 hours and 20 minutes. The mean duration of hospital stay was 4.10 days, with a range of 3 days to 9 days. Finally, the amount of analgesia used ranged from no medication at all to 90 milligrams of medication, with an average of 36.687 milligrams.

TABLE 3
MEASURES OF CENTRAL TENDENCY AND VARIABILITY OF
THE CONTINUOUS PHYSIOLOGICAL DATA FROM
THE PREPARED GROUP

Variable	Mean	Standard Deviation	Range of Scores
Birth Weight in Ounces	123.4	13.937	96-144
Apgar Score	8.767	.828	5-9.5
Duration of Labor in Minutes	553.567	244.691	199-1234
Duration of Hospital Stay in Days	4.30	1.149	3-9
Amount of Analgesia in Milligrams	32.167	23.950	0-90

TABLE 4

MEASURES OF CENTRAL TENDENCY AND VARIABILITY OF THE
CONTINUOUS PHYSIOLOGICAL DATA FROM THE
NON-PREPARED GROUP

Variable	Mean	Standard Deviation	Range of Scores
Birth Weight in Ounces	121.5	19.044	56-146
Apgar Score	8.717	.773	6.5-9.5
Duration of Labor in Minutes	492.067	220.307	128-1013
Duration of Hospital Stay in Days	4.10	1.398	3-9
Amount of Analgesia in Milligrams	36.667	20.483	0-75

To determine whether the discrete observations constituted a departure from what would be expected by chance, a chi-square test was performed. The expected cell frequencies were compared to the actual values found in the table according to the following formula (Nie, Jenkins, Steinbrenner, and Bent, 1975):

$$\chi^2 = \frac{(f_o - f_e)^2}{f_e}$$

Table 5 summarizes the chi-square test performed for the use or nonuse of forceps.

Table 5 shows the chi-square value at 0.636. A chi-square distribution table was referred to for a tabular value of 3.841 at the .05 level of confidence with one degree of freedom. Since the calculated value was less than the tabular value, it can be concluded that the observed differences in use and nonuse of forceps between the prepared and non-prepared groups were not significant at the .05 level.

Table 6 summarizes the chi-square test performed for the type of anesthesia used (conduction or local anesthesia). The chi-square calculated value was found to be 0.288. A critical value of 3.841 was determined. Since the calculated value was less than the critical value, it can be concluded that the observed differences in type of anesthesia used were not significant at the .05 level.

A one-way analysis of variance test was utilized to

TABLE 5
GOODNESS OF FIT TEST FOR THE USE OR
NONUSE OF FORCEPS

	Use of Forceps	Nonuse of Forceps	Row Total
Prepared Group	fo = 10 fe = 11.5	fo = 20 fe = 18.5	30
Non-Prepared Group	fo = 13 fe = 11.5	fo = 17 fe = 18.5	30
Column Total	23	37	60

$$\chi^2 = .636$$

$$\text{Significance} = 0.4257$$

χ^2 table value at .05 level of confidence with one
degree of freedom = 3.841

TABLE 6
GOODNESS OF FIT TEST FOR THE TYPE OF ANESTHESIA USED
(CONDUCTION OR LOCAL ANESTHESIA)

	Conduction Anesthesia	Local Anesthesia	Row Total
Prepared Group	fo = 18 fe = 19	fo = 12 fe = 11	30
Non-Prepared Group	fo = 20 fe = 19	fo = 10 fe = 11	30
Column Total	38	22	60

$$\chi^2 = .288$$

$$\text{Significance} = 0.5921$$

χ^2 table value at .05 level of confidence with one
degree of freedom = 3.841

determine if there were significant differences between prepared and non-prepared groups for the continuous physiological data. Tables 7 through 11 summarize the one-way analysis of variance for differences between the continuous variables of birth weight, Apgar Score, duration of labor in minutes, duration of hospital stay in days, and the amount of analgesia used in milligrams.

TABLE 7
ANALYSIS OF VARIANCE SUMMARY FOR THE
VARIABLE, BIRTH WEIGHT

Source of Variation	Sum of Squares	df	Mean Squares	F Ratio	F .05
Between Groups	54.1498	1	54.1498	0.195	4.02
Within Groups	16150.6484	58	278.4592		
Total	16204.7969	59			

TABLE 8
ANALYSIS OF VARIANCE SUMMARY FOR THE
VARIABLE, APGAR SCORE

Source of Variation	Sum of Squares	df	Mean Squares	F Ratio	F .05
Between Groups	0.0378	1	0.0378	0.059	4.02
Within Groups	37.2082	58	0.6415		
Total	37.2460	59			

TABLE 9
ANALYSIS OF VARIANCE SUMMARY FOR THE
VARIABLE, DURATION OF LABOR

Source of Variation	Sum of Squares	df	Mean Squares	F Ratio	F .05
Between Groups	56733.75	1	56733.75	1.047	4.02
Within Groups	3143836.0	58	54204.0664		
Total	3200569.0	59			

TABLE 10

ANALYSIS OF VARIANCE SUMMARY FOR THE VARIABLE,
DURATION OF HOSPITAL STAY

Source of Variation	Sum of Squares	df	Mean Squares	F Ratio	F .05
Between Groups	0.5999	1	0.5999	0.366	4.02
Within Groups	94.9997	58	1.6379		
Total	95.5995	59			

TABLE 11

ANALYSIS OF VARIANCE SUMMARY FOR THE VARIABLE,
AMOUNT OF ANALGESIA USED

Source of Variation	Sum of Squares	df	Mean Squares	F Ratio	F .05
Between Groups	303.75	1	303.75	0.612	4.02
Within Groups	28800.7852	58	496.5652		
Total	29104.5352	59			

The results of the analysis of variance for the variable, birth weight (Table 7), indicated that an F-Ratio of 0.194 existed. This value did not equal or exceed the appropriate table value of 4.02, therefore, it can be concluded that there is no significant (.05 level) difference between the means for birth weight for the prepared and non-prepared groups.

For the variables Apgar Score (Table 8), duration of labor (Table 9), duration of hospital stay (Table 10), and the amount of analgesia used (Table 11), an F-Ratio of 0.059, 1.047, 0.366, and 0.612 respectively was found. These values also failed to equal or exceed the appropriate table value of 4.02, therefore, it can be concluded that there is no significant (.05 level) difference between the means for Apgar Score, duration of labor, duration of hospital stay, and amount of analgesia used for the prepared and non-prepared groups.

While the findings of no differences between groups on the physiological data analyzed may be contrary to many findings reported in the review of literature, there is a crucial factor which should be considered. It should be noted that there was no control over the procedures of the individual physicians in charge of the subjects. Personal routine or custom of the physician may have exerted more influence than the presence or absence of childbirth preparation. This was recognized as a limitation of the study in Chapter I.

IV. ANALYSIS OF THE PSYCHOLOGICAL (ATTITUDINAL) DATA

The psychological (attitudinal) data consisted of information obtained from administration of the Maternal Attitude to Pregnancy Instrument. Four separate factors were identified within this questionnaire and have been described in Chapters II and III. Each of these four factors were found to measure different identifiable attitudes toward pregnancy and delivery. Factor I reflects feelings of well-being and acceptance of pregnancy, labor, and delivery in the absence of fear. Factor II measures exaggerated feelings of well-being, as well as pride and positive feelings toward the child and physician. Factor III reflects particularly strong concerns about delivery, and positive interests in breast feeding. Factor IV reflects positive attitudes toward the baby and a lack of undue concern about its sex and normality. As a more thorough method of examination, the instrument was evaluated by factors as well as by total score.

The Mann-Whitney U Test was applied to the attitudinal data to determine whether the various ranked values for the attitudes in question were equally distributed throughout both samples. Due to the fact that sample size exceeded 20, a modification of the Z test was implemented. This procedure was based on the fact that Mann and Whitney (1947) have shown that as the sample size increases, the sampling distribution of U rapidly approaches the normal distribution.

The particular formulas (Siegel, 1956) applied in this case were:

$$U = n_1 n_2 + \frac{n_1(n_1+1)}{2} - R_1$$

and

$$Z = \frac{\frac{U - n_1 n_2}{2}}{\sqrt{\frac{(n_1)(n_2)(n_1+n_2+1)}{12}}}$$

Table 12 summarizes the differences in attitudes between the prepared and non-prepared groups.

It was found that there was a significant difference in attitude scores between groups on each of the four factors as well as the total score. After the Bonferroni Adjustment (Neter and Wasserman, 1974), Factor I was seen to have a significant difference at the .05 level, Factor II at the .001 level, Factor III at the .001 level, Factor IV at the .01 level, and the total score at the .001 level.

Table 13 provides means and standard deviations of attitude scores by factors and total score. The scores were higher for the prepared group than for the non-prepared group which indicates that the prepared group demonstrated more positive attitudes toward pregnancy and delivery than the non-prepared group.

Another technique used to investigate the attitudinal differences between the two groups was the multiple discriminant analysis. This procedure was intended to demonstrate the ability of the Maternal Attitude to

TABLE 12

ATTITUDINAL DIFFERENCES OF PREPARED VS. NON-PREPARED
GROUPS AS MEASURED BY U AND Z SCORES

	U Value	Z Value	Significance of Difference
Factor I	140.0	2.7434	.05
Factor II	77.0	4.1536	.001
Factor III	42.0	4.9390	.001
Factor IV	101.5	3.5953	.01
Total Score	58.5	4.5289	.001

TABLE 13
MEANS AND STANDARD DEVIATIONS OF ATTITUDE SCORES BY FACTORS AND TOTAL SCORE

	Factor I		Factor II		Factor III		Factor IV		Total Score	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Prepared	65.7826	6.142	27.3478	2.569	12.3913	1.270	29.9130	2.968	135.4348	9.976
Non-Prepared	58.5652	7.999	23.4783	2.778	9.4348	1.727	25.6522	3.903	117.1304	11.474

Pregnancy Instrument to discriminate members of one group from another based on the factors within the instrument. The discriminant analysis results of the four factors are presented in Table 14.

The discriminant analysis revealed that there was a significant discrimination between the two groups by the attitudes found within the various factors.

TABLE 14
SUMMARY OF DISCRIMINATING ABILITY OF
FACTORS WITHIN THE MAPI

Variable	Wilk's Lambda	F	Significance of Discriminating Ability
Factor I	0.78882	11.78	.05
Factor II	0.64653	24.06	.001
Factor III	0.50151	43.74	.001
Factor IV	0.71703	17.36	.01

V. SUMMARY

This chapter has dealt with the presentation and analysis of the data. The chi-square and analysis of variance tests which were carried out found no significant physiological differences between participants in child-birth preparation and non-participants.

The attitudinal data, compiled from the Maternal Attitude to Pregnancy Instrument, did show significant differences between the two groups. It was also found that the prepared group exhibited more positive attitudes than the non-prepared group.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

The Problem

The problem was to determine if formal childbirth preparation influenced the physical health of the mother and/or the newborn, and if the mother's attitudes toward pregnancy and delivery were influenced by this preparation for childbirth.

The study was designed to answer the following questions:

1. Does formal childbirth preparation make a difference in selected physiological aspects of labor and delivery?
2. Does formal childbirth preparation make a difference in maternal attitudes toward pregnancy, labor, and delivery?
3. Does formal childbirth preparation influence the physical health of the newborn?

Procedures

The process began with a determination of a timely health related concern which lent itself to empirical study. The related literature was then reviewed followed by a selection of an instrument and diagnostic procedures to be used in the analysis. The physiological data used in this study were collected from patient's hospital records. The

psychological (attitudinal) data were garnered from questionnaires mailed to the subjects. Analysis of the data included descriptions of the data and procedures which would test the stated hypothesis.

II. FINDINGS

The following findings were based upon analysis of the data collected in this study:

1. There were no physiological differences at the .05 level of significance between the prepared childbirth group and non-prepared childbirth group in the use or nonuse of forceps with delivery.

2. There was not a physiological difference between the prepared childbirth group and non-prepared childbirth group at the .05 level of significance regarding the type of anesthesia used (conduction or local anesthesia).

3. No significant physiological differences at the .05 level were seen between the prepared childbirth group and non-prepared childbirth group in relation to the birth weight of the infant.

4. There were no physiological differences between the prepared childbirth group and non-prepared childbirth group with respect to the Apgar Score at the .05 level of significance.

5. There was not a significant physiological difference between the prepared childbirth group and non-prepared

childbirth group at the .05 level in relation to the amount of analgesia used.

6. No physiological differences were seen at the .05 level of significance between the prepared childbirth group and non-prepared childbirth group with respect to the duration of labor.

7. There were no physiological differences at the .05 level of significance between the prepared childbirth group and non-prepared childbirth group with respect to the duration of hospital stay.

8. There were psychological differences between the prepared childbirth group and non-prepared childbirth group at the .001 level with respect to attitudes which reflected exaggerated feelings of well-being during pregnancy, pride of the pregnancy, positive maternal feelings to the child, and positive attitudes toward the doctor.

9. There was a psychological difference at the .001 level of significance between the prepared childbirth group and non-prepared childbirth group in relation to attitudes which reflected an unusual concern about the delivery and birth, a desire for active participation in the delivery, and a positive interest in breast feeding.

10. There were significant psychological differences between the prepared childbirth group and non-prepared childbirth group at the .01 level with regards to attitudes which reflected a positive feeling about the baby and lack

of undue concern regarding its sex and normality.

11. The prepared childbirth group had higher scores than the non-prepared group for each of the four MAPI factors, which indicates that the prepared group had more positive attitudes toward pregnancy and delivery than the non-prepared group.

III. CONCLUSIONS

Based upon the findings of this study, the following conclusions were drawn:

1. Formal childbirth preparation should not be viewed as a mechanism to improve the physiological aspects of labor and delivery. However, formal childbirth preparation provided no evidence of adverse physical effects on labor and delivery.

2. The newborn infant does not benefit physically from maternal participation in formal childbirth preparation as demonstrated by the evaluative procedures in this study. However, maternal participation in formal childbirth preparation provided no evidence of adverse physical effects on the infant as demonstrated by the evaluative procedures in this study.

3. Positive attitudinal changes can be derived from maternal participation in formal childbirth preparation.

IV. RECOMMENDATIONS

Based on the results of this study, the following recommendations for future research were made:

1. A similar study utilizing multiparous mothers should be conducted.
2. Long range studies on the health of the child of a prepared mother should be conducted to determine if any physiological differences are manifested in later life.
3. Studies focusing on a particular form of childbirth preparation (Lamaze, LeBoyer, etc.) should be conducted so that comparisons could be made.
4. Long range studies on attachment and bonding of children from prepared parents should be conducted to determine if these improved maternal attitudes have remained.
5. Studies of the influence of childbirth preparation on the father should be conducted.

CHAPTER VI

FURTHER ANALYSIS AND IMPLICATIONS

Prepared childbirth as a structured entity is certainly not a novel occurrence. The concept has been in existence for over 30 years. But today with our ever increasing accentuation on womens' rights, the idea of childbirth preparation is at a peak. It is only logical that a woman would desire some input and control of an experience with the significance of childbirth. However, it should not be surmised that only the mother would benefit from this experience.

Most forms of childbirth preparation provide the father with a significant role in the process. This paternal participation is reflected in closer ties and stronger attachment relations between father and infant as well as father and mother. Again, logic dictates that the father would exhibit more empathy towards his child were he to become actively involved in the birth experience. While it is obvious that the father was actively involved with the conception of the child, the traditional paternal role at birth has consisted of pacing the floor in the waiting room. The nurse would come in and inform the father of the gender of his child, and the father could look at his child through the observation window. No contact between the two was allowed until the baby was dismissed from the hospital.

In contrast, for the prepared couple there is the joy and delight of seeing and holding the infant in the first few seconds of its new life. While this time might not be significant in duration, it most assuredly is significant in importance. This occasion is the culmination of many months spent in preparation and anticipation of the event of birth, and the newborn child is the tangible reward of those efforts spent.

While this study did not focus on a specific form of childbirth preparation, it should be noted that the goals and expectations of most forms of prepared childbirth are fairly similar. Although there are many variations of childbirth preparation, the general aim of these methods is to provide a safe and emotionally rewarding experience for those involved with the birth experience.

This study found that attitudes toward pregnancy and delivery were greatly enhanced by participation in formal childbirth preparation. However, the selected physiological variables examined in this study were not significantly influenced by the presence or absence of preparation for childbirth.

Some findings of interest which were not utilized in the text of this study involved the age of the subjects and the selected method of feeding. Regarding the age, it was found that those women involved with childbirth preparation were significantly older than those women not involved.

Table 15 provides an analysis of variance summary for the prepared and non-prepared groups regarding the age of the subjects.

An F-Ratio of 8.584 was determined in the analysis of variance. With a table value of 7.12 at the .01 level of significance it was determined that there was a significant difference between the two groups regarding the age of the subjects.

Table 16 indicates the measures of central tendency and variability for the age of the subjects.

The mean age of the prepared group was over three years greater than the mean age for the non-prepared group. Therefore, the significant difference in ages indicates that the prepared group was significantly older than the non-prepared group.

There are several possible explanations for this occurrence. One explanation is that the prepared group may have delayed childbearing for professional reasons. Prior to the decision to have children many of these women may have elected to complete their education or establish themselves in some professional endeavor.

Another explanation could be the high number of unwed mothers in the non-prepared group. Seven women with a single marital status were found in the non-prepared group, while only one was found in the prepared group.

A final explanation in an attempt to account for the

TABLE 15

ANALYSIS OF VARIANCE SUMMARY FOR THE PREPARED AND
NON-PREPARED GROUPS REGARDING THE
AGE OF THE SUBJECTS

Source of Variation	Sum of Squares	df	Mean Squares	F Ratio	F .01
Between Groups	153.5896	1	153.5896	8.584	7.12
Within Groups	1037.7290	58	17.8919		
Total	1191.3186	59			

TABLE 16

MEASURES OF CENTRAL TENDENCY AND VARIABILITY
REGARDING THE AGE OF THE SUBJECTS

	Mean	Standard Deviation	Range of Scores
Prepared	23.933	4.339	16-33
Non-Prepared	20.733	4.118	15-32

significant difference in ages could be that those women who elected to involve themselves in childbirth preparation were motivated to do so partly because of their higher age. The childbirth preparation course may have been viewed as a vehicle to reduce some of the risks associated with childbirth in older women.

Another finding of interest which was not utilized in the text of the study involved the method of feeding of the infant. Table 17 indicates the frequencies of the type of feeding for the two groups.

Twenty-six of the thirty prepared subjects were found to breast feed their child, which resulted in a rate of 86.7 percent. Only four of the thirty non-prepared subjects were found to breast feed their child, which resulted in a rate of 16.7 percent.

Table 18 summarizes the chi-square test for the two groups regarding the type of feeding selected.

A chi-square value of 29.432 was found. A chi-square distribution table was referred to for a tabular value of 10.821 at the .001 level of confidence with one degree of freedom. Since the calculated value was greater than the tabular value, it can be concluded that the observed difference in breast feeding and bottle feeding between the prepared and non-prepared groups was significant at the .001 level. This finding is consistent with the attitudes toward breast feeding expressed in Factor III of the Maternal

TABLE 17

FREQUENCIES OF THE TYPE OF FEEDING FOR THE
PREPARED AND NON-PREPARED GROUPS

	Prepared Group		Non-Prepared Group	
	Absolute Frequency	Percentage	Absolute Frequency	Percentage
Breast Feeding	26	86.7	5	16.7
Bottle Feeding	4	13.3	25	83.3

TABLE 18

GOODNESS OF FIT TEST FOR THE TYPE OF FEEDING

	Breast Feeding	Bottle Feeding	Row Total
Prepared Group	fo = 26 fe = 15.5	fo = 4 fe = 14.5	30
Non-Prepared Group	fo = 5 fe = 15.5	fo = 25 fe = 14.5	30
Column Total	31	29	60

$$\chi^2 = 29.432$$

χ^2 table value at .001 level of confidence with one
degree of freedom = 10.821

Attitude to Pregnancy Instrument.

The rate of response for the questionnaire mailed to subjects in the study deserves to be mentioned. A 77 per cent rate of response was achieved with this questionnaire. There were several things done by the author which might be attributed to this high rate of return.

Since this study dealt with a medical event, the cover letter sent with each questionnaire contained the signature of the obstetrician who delivered the subject's child, as well as the signature of the author. Attempting to relate this study to a medical locale, hospital letterhead stationery was used for the cover letter and the questionnaires were returned to a hospital address. It was assumed that a greater return would be achieved by relating this study to a medical environment rather than an educational environment.

Another procedure which may have enhanced the rate of return was a thorough telephone follow-up. Each subject was contacted by telephone to determine if they had received their questionnaire, and if it had been filled out and returned. In the course of this follow-up it was discovered that two subjects had their questionnaires destroyed in a fire when their house burned, and a third subject never received her questionnaire due to an incorrect address. A second mailing was carried out for each of these cases. While these procedures involved some additional effort, the results were reflected in the high rate of response achieved.

The more positive attitudes of the prepared childbirth group toward pregnancy, labor, and delivery found in this study gives credence to the value of formal childbirth preparation. Many implications may be drawn from the success of this process. Improved attitudes toward the birth experience could possibly reduce the divorce rate of couples involved with childbirth preparation and provide for a more stable and balanced environment for the child to grow up in. It is important for the medical as well as the educational community to understand the mechanism of this process so that it can be employed to it's greatest advantage.

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APPENDIXES

APPENDIX A

DATA COLLECTION SHEET

DATA COLLECTION SHEET

Name of Patient	Hospital	Forceps	Birth Weight	Apgar	Duration of Labor	Duration of Hosp. Stay	Amounts of Medication	Complications

APPENDIX B

PHYSICIAN CONSENT FORM

Mr. Steve Furney
Division of Health & Safety
1914 Andy Holt Avenue
The University of Tennessee
Knoxville, Tennessee 37916

Dear Mr. Furney:

This is to indicate to you that you have our permission to contact patients in your study, the mechanism of which we have reviewed.

Sincerely,

Signature of Physician

Signature of Physician

APPENDIX C .

COVER LETTERS AND QUESTIONNAIRE

Dear Ms.

The University of Tennessee Hospital is participating in a study on maternal attitudes to pregnancy. We are interested in knowing some of your attitudes toward pregnancy, labor, and delivery. In order to do this, we are asking for your help in two ways:

1. To read and complete the enclosed questionnaire.
2. To return to us within five days, or at your earliest convenience, the questionnaire in the stamped, self-addressed envelope.

The study is being directed by Steven R. Furney, a University of Tennessee doctoral candidate in Health Education, who will utilize the project as a dissertation. Names of participants and information obtained will not be identifiable in the findings or in the reports of the study. Only summary information will be utilized.

Your physician from The University of Tennessee Hospital is cooperating in this study by consenting to our contacting you about your participation in the project; however, if you choose not to participate your relationship with your physician or physicians will in no way be affected. Your cooperation and participation will aid us in our continuing efforts to better understand the birth experience. In addition, it will hopefully increase medical knowledge and progress. Please feel free to call me (telephone 983-7379) if you have any questions concerning the project.

Sincerely,

Steven R. Furney
Project Director
Maternal-Child Health Project

Signature of Physician

Signature of Physician

Dear Ms.

St. Mary's Hospital is participating in a study on maternal attitudes to pregnancy. We are interested in knowing some of your attitudes toward pregnancy, labor, and delivery. In order to do this, we are asking for your help in two ways:

1. To read and complete the enclosed questionnaire.
2. To return to us within five days, or at your earliest convenience, the questionnaire in the stamped, self-addressed envelope.

The study is being directed by Steven R. Furney, a University of Tennessee doctoral candidate in Health Education, who will utilize the project as a dissertation. Names of participants and information obtained will not be identifiable in the findings or in the reports of the study. Only summary information will be utilized.

Your physician from St. Mary's Hospital is cooperating in this study by consenting to our contacting you about your participation in the project; however, if you choose not to participate your relationship with your physician or physicians will in no way be affected. Your cooperation and participation will aid us in our continuing efforts to better understand the birth experience. In addition, it will hopefully increase medical knowledge and progress. Please feel free to call me (telephone 983-7379) if you have any questions concerning the project.

Sincerely,

Steven R. Furney
Project Director
Maternal-Child Health Project

Signature of Physician

Signature of Physician

MATERNAL ATTITUDE TO PREGNANCY INSTRUMENT (MAPI)

Instructions: Read each of the statements below. Rate each statement as to whether you strongly agree, agree, disagree, or strongly disagree. There are differences of opinion about these statements. We would like to know what you think about these statements. Please check (X) in the space provided that choice which comes closest to saying how you feel about each statement.

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. Most women feel sick to their stomachs for the first three months of their pregnancy.	_____	_____	_____	_____
2. Looking forward to having a baby gives greater pleasure than actually having one.	_____	_____	_____	_____
3. At least half of the babies born in the U.S. are not "planned."	_____	_____	_____	_____
4. Most women would have more babies if they did not have to be pregnant for nine months.	_____	_____	_____	_____
5. You can love a baby before it's actually born.	_____	_____	_____	_____
6. Most women want to be awake during labor.	_____	_____	_____	_____
7. A woman looks her best during her pregnancy.	_____	_____	_____	_____
8. One out of every five babies in the U.S. is born with some physical defect.	_____	_____	_____	_____

	Strongly Agree	Agree	Disagree	Strongly Disagree
9. A woman almost always gets her figure back after pregnancy.	_____	_____	_____	_____
10. A woman has to be handled gently during pregnancy because she is liable to get excited easily.	_____	_____	_____	_____
11. Many women feel they will lose their husbands when they are pregnant.	_____	_____	_____	_____
12. Most fathers handle their new babies very well.	_____	_____	_____	_____
13. The delivery is a frightening part of pregnancy.	_____	_____	_____	_____
14. Most women know how their babies are born.	_____	_____	_____	_____
15. Most pregnant women do not really care if they have a boy or girl.	_____	_____	_____	_____
16. It is unusual for a woman to be sorry that she became pregnant.	_____	_____	_____	_____
17. A woman should not continue to hold a job after she has a baby.	_____	_____	_____	_____
18. Most women feel especially well during their pregnancy.	_____	_____	_____	_____

	Strongly Agree	Agree	Disagree	Strongly Disagree
19. Many mothers are permanently injured during pregnancy.	_____	_____	_____	_____
20. Most women would like to take care of their own newborn babies in the hospital.	_____	_____	_____	_____
21. Most women dream about having an abnormal baby sometime during their pregnancy.	_____	_____	_____	_____
22. It is very difficult to lose a baby during pregnancy.	_____	_____	_____	_____
23. Most doctors take a great deal of interest in their patients.	_____	_____	_____	_____
24. Most women "feel blue" during or soon after their pregnancy.	_____	_____	_____	_____
25. Very few unborn babies in the U.S. are lost during the mother's first three months of pregnancy.	_____	_____	_____	_____
26. The first three months of pregnancy are very easy.	_____	_____	_____	_____
27. It is important to have a nurse at home for several weeks because most mothers do not know how to take care of their new baby.	_____	_____	_____	_____
28. Breast-feeding does not ruin the mother's figure.	_____	_____	_____	_____

		Strongly Agree	Agree	Disagree	Strongly Disagree
29.	The labor is a horrible part of the pregnancy.	_____	_____	_____	_____
30.	It is unusual for the mother not to love her baby immediately.	_____	_____	_____	_____
31.	Most women are concerned about being able to carry their babies to term.	_____	_____	_____	_____
32.	If a mother reads about animals during her pregnancy, her baby will be born deformed.	_____	_____	_____	_____
33.	Most newborn babies are alike.	_____	_____	_____	_____
34.	Most women enjoy wearing maternity clothes.	_____	_____	_____	_____
35.	Very often the father pays more attention to the new baby than to the wife.	_____	_____	_____	_____
36.	It takes a long time for the mother to feel that her baby is really her own.	_____	_____	_____	_____
37.	Many women would prefer to have their babies delivered at home.	_____	_____	_____	_____
38.	Most mothers need a lot of medical advice about their new babies.	_____	_____	_____	_____
39.	If a pregnant woman is hurt, her unborn baby is hurt also.	_____	_____	_____	_____

	Strongly Agree	Agree	Disagree	Strongly Disagree
40. The unborn baby gets its food from the mother's stomach.	_____	_____	_____	_____
41. Breast-fed babies are healthier than bottle-fed babies.	_____	_____	_____	_____
42. Most women are unprepared for having a baby.	_____	_____	_____	_____
43. Worry cannot make a mother lose her unborn baby.	_____	_____	_____	_____
44. If hospitals were not so crowded, it would be better for the new mother to stay at least 10 days.	_____	_____	_____	_____
45. Pregnancy can be an awful time.	_____	_____	_____	_____
46. Most women want to breast-feed their babies.	_____	_____	_____	_____
47. Putting the mother to sleep during birth can hurt the baby.	_____	_____	_____	_____
48. Most women feel that being a mother is the happiest thing in their lives.	_____	_____	_____	_____

VITA

Steven Reed Furney was born in Tyler, Texas, on November 21, 1952. He attended schools in Lake Jackson, Texas, and graduated from Brazoswood High School in 1971. He then enrolled at Texas A&M University and was graduated magna cum laude in May 1975 with a Bachelor of Science degree in Health and Physical Education, with a second teaching field in Biology.

In June 1975 he was awarded a teaching fellowship at the University of Houston to pursue a master's degree. In August 1976 he received the Master of Education degree with a major in Health Education.

Following graduation from the University of Houston he was employed for three years by the Alief Independent School District, Alief, Texas, where he taught health and physical education and coached football and track.

In January 1979 the author came to Knoxville where he entered the doctoral program at The University of Tennessee. During his doctoral program he was employed as a Graduate Teaching Assistant. He received a Doctor of Education degree with a major in Health Education with collateral areas in Public Health, and Educational Administration and Supervision in December 1980.

He is a member of Phi Kappa Phi, Phi Epsilon Kappa, Kappa Delta Phi, the Alliance for the Advancement of Health Education, and has served as vice-president of The University

of Tennessee at Knoxville chapter of Eta Sigma Gamma, the National Professional Honorary in Health Science.

He is married to the former Suzan Elene Neely of Lake Jackson, Texas, and has two children, Tyler and Daniel.