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A Comparative Analysis of Perinatal Outcomes
of Vertical and Horizontal second Stage Positions in a Home Birth Population

by

Marina Alzugaray

THESIS

Submitted in partial satisfaction of the requirements for the degree of

MASTER OF SCIENCE

in

NURSING

in the

GRADUATE DIVISION

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San Francisco

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Copyright 1994
by
Marina Alzugaray

Dedicated to each woman who has discovered her body's
power during childbirth, and to all the women who have
taught me by asking me to participate in their birth.

Acknowledgments

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I truly appreciate each of you, and your willingness to support and guide me.

Thank you.

Abstract

A Comparative Analysis Of Perinatal Outcomes Of Vertical And Horizontal Second Stage Positions In A Home Birth Population.

Marina Alzugaray, CNM

During the last two decades researchers have compared perinatal outcomes between several vertical and horizontal maternal positions to establish safety and viability in a variety of birth positions. However, previous investigators have not generally addressed the impact different environments have on women's ability to choose birthing positions. Research on positions for second stage of labor assumed by women in home environments and their associated maternal and infant perinatal outcomes has not been conducted due to the paramount importance of establishing safety in home births. The investigation of birth positions in home settings can further the knowledge of childbirth environments, and positions for the second stage of labor.

This retrospective comparative study describes second stage positions in a home birth population, groups positions into vertical and horizontal, and compares their perinatal outcomes. To meet the inclusion criteria women were screened at the onset of labor as essentially normal and had to remain without complications during their first stage of labor. The convenience sample of women (N = 156) chose their birth positions, and served as their own controls. The ability of women to choose position was supported by ecofeminist theory. Maternal birth positions were grouped into vertical (n = 96) semi-sitting, squatting, kneeling, sitting, and standing erect; and horizontal (n = 60) hands and knees, side-lying, supine and standing leaning.

Maternal outcomes as length of second stage, birth position, blood loss and perineal results, and infant outcomes such as weight, Apgar scores, and resuscitation procedures were recorded on a birth summary form. Differences between the outcomes of the two groups were analyzed with Pearson chi-square, Fisher exact test, or t test, and the significance was set at $<.05$. There was no significant statistical difference between

vertical or horizontal outcome indices except for length of second stage in the vertical group which had a 17 minutes mean increase ($p < .02$). Vertical positions were utilized in eighty percent of prolonged second stage without compromising the infants. Further investigation of environmental factors that promote women's ability to choose birthing positions and the use of vertical positions to resolve labor dystocia are needed.

TABLE OF CONTENTS

Copyright	ii
Dedication	iii
Acknowledgments	iv
Abstract	v
Table of Content	vii
List of Appendices	x
List of Tables	x
Chapter I Introduction	1
The Study Problem	1
Purpose of the Study	2
Research Questions	3
Significance of the Study	3
Assumptions	3
The Researcher	4
Chapter II Literature Review and Conceptual Framework	6
Review of the Literature	6
Historical perspective on birthing positions	6
Outcome indices	8
Length and efficacy of labor	9
Perineal integrity	10
Blood loss	12
Infant outcomes	13
Conceptual Framework	14
Ecofeminism and the home birth paradigm	14
Childbirth environments	15

Childbirth setting	16
Culture of the setting	17
Policies	20
Operational description of concepts and definition of terms	21
Chapter III Methodology	24
Design	24
Variables	24
Statistical test	24
Setting	25
Sample	26
Human subject assurance	26
Participants	26
Criteria for sample selection	26
Techniques for Data Collection	27
Data collection	27
Data management	27
Instrument	29
Validity and reliability	29
Chapter IV Results	30
What were the Birth Positions	30
Birth positions	30
Vertical group	30
Horizontal group	33
What Variables Were Associated with Vertical and Horizontal Positions	33
Parity	33

Ethnicity	34
Infant weights	34
Perinatal Outcomes Compared	35
Length of second stage of labor	35
Perineum	36
Repairs	36
Blood loss	37
Hemorrhage	37
One minute Apgar scores	38
Five minute Apgar scores	38
Infant resuscitation	39
Chapter V Discussion	41
Results of Vertical and Horizontal Positions	41
Perinatal outcomes	42
Infant outcomes	44
Strengths and Limitations	45
A laboring woman's private space	45
The birth setting	46
Culture of the setting	47
Ethical and Political Issues Affecting Childbirth	48
Theory Development	51
Implications for Research and Practice	51
Research	51
Practice	53
References	55
Obstetrical Definitions	60

Appendices

Appendix A	Birthing kit	62
Appendix B	Midwife's birth equipment	64
Appendix C	Care Second stage, perineal, third stage	66
Appendix D	Labor progress form	69
Appendix E	Birth summary form	71
Appendix F	Care philosophy	73

List of Tables

Table 1	Positions for birth	31
Table 2	Vertical group	32
Table 3	Horizontal group	33
Table 4	Demographic characteristics	34
Table 5	Infant weights	35
Table 6	Length of second stage of labor	36
Table 7	Perineum	36
Table 8	Perineal repairs	37
Table 9	Estimated blood loss	37
Table 10	Hemorrhage	38
Table 11	1 minute infant Apgar scores	38
Table 12	5 minute infant Apgar scores	39
Table 13	Infant resuscitation	40

CHAPTER I

Introduction

This chapter introduces the study problem, its questions, purpose, significance and assumptions, definition of terms, and limitations of the study.

The Study Problem

The overall results from home birth studies seem to indicate that, even with the variety of birthing positions commonly used at home (Balaskas, 1991), infant and maternal morbidity associated with planned and attended home births is reduced when compared to similar hospital populations (Durand, 1992; Greener & Anderson, 1991; Mehl & Peterson, 1977). Although there is an abundance of studies on positions for second stage of labor, minimal research has been conducted that investigates positions in-out-of-hospital settings or in the home environments. Researchers have investigated positions for labor and birth to establish the viability and effectiveness of maternal positions, and have compared a variety of positions to find the best position for childbirth. Overwhelmingly however, scientists have neglected several other important aspects of childbirth which affect maternal positions; the experiences of women, their care from women's perspectives, and childbirth in women's environments such as the home.

Childbirth not only is a normal physiologic event but one that integrates the psychological, emotional, environmental, cultural, and political aspects of the particular woman. In addition, childbirth has a significant impact on the life of both the mother and child as well as on her family, and society at large. Yet there have been few studies of the behavior of women who deliver at home, the midwives involved in the process, and how home births can enhance the birth experience. Although home birth research has been conducted in the past, the complexity of the phenomenon has not received sufficient inquiry to adequately describe childbirth in home settings. Researchers have tended to emphasize issues of safety which are associated with two main factors that the home birth

must be planned, which includes screening out women with medical or obstetrical complications, and that an experienced attendant must be present at the birth. When these two requirements were met, similar or better outcomes have been obtained for home birth groups when compared to either matched hospital populations, or to national morbidity and mortality statistics (Burnett et al., 1980; Estes, 1978; Hinds, Gershon & Allen, 1985; Sullivan & Beeman, 1983). It has been recommended that future studies on home births investigate issues other than safety to broaden the knowledge base of childbirth at home (Durand, 1992; Mehl, 1977; Sullivan & Beeman, 1983). The study of childbirth in a woman's home has as much significance and complexity as other investigations of childbirth outcomes, and can serve to widen the knowledge on maternal positions.

An interesting aspect of home birth is the various positions in which women chose to birth their infants and the variables involved in accomplishing such birthing positions. Durand (1992) elaborated on one of the reasons why the home birth population has better outcomes: "the restricted freedom of movement of the laboring woman may create an atmosphere at a hospital birth that undermines self-confidence and encourages passivity on the part of the laboring woman, diminishing her ability to deliver spontaneously" (p. 452). The home setting has environmental conditions unlike other settings previously used to investigate positions for birth. The study of second stage positions in a home birth population can serve as a dynamic guide to the study of childbirth from women's perspective, and the positions assumed by women in their environment.

Purpose of Study

The purpose of the study was to describe birthing positions assumed by women in their home environments, group the women's positions into vertical and horizontal, and compare maternal and infant perinatal outcomes between women birthing in vertical and horizontal groups.

Research Questions

The research questions in this study were:

1. What were the birth positions?
2. What variables were associated with the use of vertical and horizontal positions?
3. How did perinatal outcomes compare between women in vertical and horizontal positions?

Significance of Study

This study contributes to the literature on positions for second stage of labor chosen by women in home settings. Positions are described, grouped into vertical and horizontal, and their perinatal outcomes compared. The perinatal outcomes including length of second stage of labor, perineal integrity, maternal blood loss, infant's Apgar scores and resuscitation procedures, are used to compare the vertical and horizontal groups. A comparison of vertical and horizontal birthing positions in a home birth population has not been previously reported. In addition, ecofeminism theory is used to articulate how environmental factors such as the setting, its culture, and political issues influence women's choices of birthing position. These factors have not been commonly identified as confounding variables in the methodology of research on birth positions.

Assumptions

The following assumptions supported the home birth midwifery practice used for this investigation. The assumptions are drawn from ecofeminism and the home birth midwifery paradigm which are further explained in Chapter 2.

- Childbirth is a universal natural biological phenomenon affecting the totality of pregnant women. During childbirth, women can connect deeply with their bodily processes when they have privacy and choice in their birthing environment. When their personal abilities are supported, women can acquire through the labor process the physical, emotional, and spiritual tools required for birthing. When women choose their own way of birthing, each birth is a unique experience.

- Birth settings have their own culture, and this culture has a direct relationship to how a birth is conceptualized. The culture of a setting impacts on the choices a woman can make during labor and birth. Congruency between the private, socio/cultural, and political aspects of a birth setting can affect birthing women and the birthing positions available to them.

- A birth environment that agrees with choices of individual women and accommodates to women's needs and cultures can facilitate birthing women's experiences. Women birthing in environments receptive to their wishes and with practitioners who can adapt to them are encouraged to access their own personal resources and bring forth their natural strength.

- Sexuality plays an important role in the activities to develop a woman's inner nature. The partners of these women are an integral part of the birthing process and their involvement needs to be facilitated.

- The instinctive knowing of birthing women is a complex relationship between a woman and her unborn child that leads her into the a wide variety of birthing positions to accommodate the descent of her child. These positions can be trusted and encouraged by practitioners.

The Researcher

I am a 45 year old Cuban female who trained as a nurse in the United States in 1975. Since that time I have been providing alternative health care services. In addition I trained as an OB/GYN nurse practitioner in 1978, and became a certified nurse-midwife in 1981. My midwifery training provided both hospital and home experiences. In 1983 I opened my own full-scope midwifery service for families in their homes. I am known as an ecofeminist and actively participated in the second original ecofeminist gathering to formulate concepts about ecofeminism, Amherst Massachusetts, August 1986.

I shared the belief in natural childbirth with the women in the study, and respected the

choices women made regarding their birth setting. Although the women lived in the same community, had the same beliefs regarding natural childbirth, and desired to birth in their homes, the women seldom knew me or each other prior to their pregnancy. However the relationship between us was established during the prenatal period. Trust and an open dialogue developed during prenatal care. In addition, I provided a monthly class that allowed me to share my birthing philosophy with the women, and served to inspire the women with case histories provided by their own peers.

One of the subjects covered in the monthly classes was the use of movement and sounds during labor which included a demonstration of vertical and horizontal birthing positions. This informal teaching method could have influenced the women in the study to assume vertical positions or to use movement to facilitate their birthing process. I in turn was influenced by the women's expressed desire to have natural childbirth. The women generally requested the use of their natural process or midwifery care instead of medical intervention whenever possible. These interactive factors allowed me to explore the realm of natural childbirth with women and families who were motivated to fully experience and participate in self empowering births.

CHAPTER II

Literature Review and Conceptual Framework

This chapter provides an historical perspective on birthing positions, and summarizes prior studies on positions and their findings including length of labor, perineal integrity, blood loss, and infant outcomes. This chapter also addresses ecofeminist concepts to examine the interaction between childbirth environments and the ability of women to chose birth positions.

Literature Review

The review of the literature provides a historical perspective on birthing positions, it summarizes prior investigations on positions for second stage of labor, and identifies maternal and infant outcome indecies used to evaluate the effectiveness and vaibility of positions in prior studies.

Historical perspective on birthing positions

Vertical positions have been traditionally used by home birth midwives. (Balaskas, 1989; Jordan, 1983) Nevertheless the transition from midwifery-attended births, in which vertical positions were commonly used, to obstetrical care led to the use of recumbent positions used today in most modern hospitals. This historical event first occurred in the seventeenth century in France and England, and was followed in North America during the eighteen century (Liu, 1979). In North America the position change for labor and delivery was taken one step further, i.e. women were routinely laid flat on their back for the first time in the history of childbirth and the lithotomy position was instituted as the norm (Dunes, 1987). However, "the adaptation and use of the lithotomy position was not based on sound scientific research" (Dunes, 1987, p. 640).

This scientific void has been questioned during the last two decades in the western world by natural childbirth proponents, feminists, sociologists, anthropologists, midwives, women, families, and physicians (Arms, 1975; Caldeyro-Barcia, 1975; Davis-Floyd, 1992; Gaskin, 1990; Jordan, 1983; Kitzinger, 1979; Lewis, & Olsen, 1985; Odont,

1984; Rothman, 1982). Due to the fundamental lack of research that should have supported the use and benefits of the lithotomy and other recumbent positions anthropologist Davis-Floyd regards their routine use as hospital rituals (Davis-Floyd 1990, 1992). The essential scientific evidence to continued bias towards the use of recumbent positions has led childbirth activists who advocate the use of vertical positions and the avoidance of routine interventions to believe that the burden of change has become women's responsibility (Arms, 1975; Gaskin, 1990; Kitzinger, 1979; Rothman, 1982).

Previous investigators have agreement on the three elements that affect labor and birth; these are "the power, the pelvis and the passenger" (Fenwick & Simkin, 1987, p. 83). From this earlier conceptualization of birth the fragmentation of the process is obvious, the woman is referred to as a pelvis and little regard was placed on what a woman could contribute to the process. To the "three Ps," Fenwick and Simkin have added one more, "position." They explained that the strength of the contractions, the woman's pelvis, and the infant were changed by maternal position. During the last two decades several hospital studies have been conducted to investigate alternatives to the recumbent position for labor and birth. For example Roberts, a certified nurse midwife who has done extensive literature reviews and research on positions for labor and birth, concluded that the lithotomy position has inherent "physiological and anatomical compromises on mother and fetus at the time of birth" and recommended positions that would decrease adverse effects (Roberts, 1980b, p. 13). The choice of other than recumbent positions for first and second stage of labor has been linked to the subjective and objective benefits to both mother and child.

Upright positions were described by home birth midwife Balaskas (1989), in her book New Active Birth. The author recommended that women seek comfort during labor and birth with upright positions. In addition Balaskas suggested using upright positions and movement as an effective way to claim women's power. She encouraged women to follow their own body's urges and promoted remaining active during labor and birth by

using movement and upright positions, and avoiding the recumbent or passive positions, especially the lithotomy position. The investigation of maternal positions and their influence on birth outcomes during the last 20 years has pointed to the benefits provided by other than the recumbent positions to laboring and birthing women. The outcome indices most frequently cited in position studies were for the women: length of first or second stages of labor, comfort or pain perception, blood loss, and perineal condition. Outcome indices for the infant were: weight, Apgar scores, and blood pH. The indices of safety are further described in this chapter, however, in order to summarize maternal and infant's outcomes of position, a brief review is provided.

Vertical and side-lying maternal positions did not seem to have a negative effect on infant indices of safety (Allahbadia & Vaidya, 1993; Belanger & Lacroix, 1991; Roberts, 1980a,b; Stewart & Spidy, 1989; Meizack, Waldenstrom & Gottvall, 1991). Improved neonatal outcomes were obtained in several studies when vertical position were compared to the lithotomy positions (Caldeyro-Barcia 1975, 1979). The side-lying position was encouraged instead of the supine position because of a "reduction in uterine blood flow from aortic compression" (Roberts p. 16, 1980b) that can adversely affect the unborn.

In two studies maternal outcome indices associated with vertical positions had agreement as to a reduction in pain perception, and a reduction of labor duration (Caldeyro-Barcia 1975, 1979; Liu 1989). Other maternal indices such as blood loss and perineal outcomes had inconclusive study findings with either no difference (Olson, Olson, & Cox, 1990; Waldenstrom & Gottvall, 1991) or an increase in blood loss noted (Gardosi, Hutson, & Lynch, 1989; Turner, Romney, Webb, & Gordon 1986) in vertical positions, especially in studies of birth chairs. Care of the perineum before delivery, women's positions for the third stage of labor, practitioner's familiarity with delivering in a variety of positions, and hospital routines were not well described in the literature. These are important variables which could account for differences in outcomes between studies.

Outcome indices. The common maternal and infant outcomes indices as length of labor, perineal integrity, blood loss, and infant's weight and Apgar scores are reviewed as they apply to different birth positions.

Length and efficacy of labor. Caldeyro-Barcia (1975, 1979), who first introduced the category of vertical position, showed favorable perinatal results with vertical postures. For example, the length of labor decreased in vertical positions. Horizontal positions, especially the lithotomy position, were shown to increase cord compression and interventions. Caldeyro-Barcia concluded from his research findings as early as 1975 that the lithotomy position was deleterious for maternal and infant health and he recommended instead the routine use of vertical positions for labor and birth (Caldeyro-Barcia, 1975).

Lateral and vertical positions have been found to increase the efficacy of labor (McKay, 1980). However, positions are not static; maternal movement is a component of the ability of women to assume different positions, and of the benefits different positions can provide. The effect of one position changes according to the subsequent positions assumed by the woman. For example Roberts (1983) found that the lateral position became more effective when alternated with sitting, and that sitting was more effective when followed by standing. Vertical positions have the implied benefit of allowing women to use movement as it is mechanically easier for a woman to get up from a sitting or squatting position than from a supine or lithotomy position. In a randomized controlled trial conducted to investigate outcomes of vertical positions with 151 parturients the researchers found that in the experimental group (standing, sitting, kneeling, squatting) 31% of the women changed positions three or more times, 45% changed positions two times and 24% did not change positions. In the control group (semi-recumbent or lateral) only 5% of the women changed position three or more times, 40% two times, and 55% women did not change positions at all. In this clinical trial the women were assigned as to upright or recumbent but once in their group they could

change to other positions within their own categories. The upright experimental group had a greater number of non-compliance 26% vs. 19% in the recumbent control group, and there were more positions changes initiated by the midwives in the control group while the upright group initiated changes more often on their own. (Gardosi, Sylvester & Lynch, 1989). In addition vertical positions have been found to reduce the incidence of difficult labors by providing a greater diameter to the maternal pelvis, and improving the fit of the infant (Fenwick and Simkin, 1987).

Perineal integrity. Research on the effect of vertical positions and the perineal integrity of women demonstrates conflicting results. Vertical birthing positions have been reported as having no effect on perineal integrity (Olson, Olson, & Cox, 1990; Waldenstrom & Gottvall, 1991). Conversely, researchers have found an increase in either labial or vulvar lacerations and swelling with vertical positions (Gardosi, Hutson, & Lynch, 1989; Turner, Romney, Webb & Gordon 1986). The disparity of study results may be related to small sample size or that in randomized studies of one position tested against another women are not free to change positions as directed by their labor, the infant, or by women' comfort. One example of a large study on perineal outcomes where parturients assumed multiple positions during labor and birth was the national birth center study.

The national birth center study was a descriptive investigation conducted in 1984 at out-of-hospital birth centers in which 11,814 women were delivered by midwives in a variety of second stage positions (Rooks, Weatherby, Ernest, Stapleton, Rosen, & Rosenfield, 1989). In this study women were allowed to have freedom of movement, and the practitioners and the politics of the setting were biased towards natural childbirth. The researchers reported that 43% of the women were in vertical positions (sitting, standing or squatting), while 29% were on their side, and 21% were in recumbent positions (back or lithotomy). Intact perineums were reported in 34% of the women while 45% women had first or second degree lacerations, and close to 2% had third or

forth degree lacerations. In addition only 17% of the women had episiotomies.

However, there was not enough information in the report to establish the perineal outcomes associated to individual positions, or the care provided to maintain perineal integrity. Nevertheless, even with the low use of episiotomies, the high rate of intact perineums, and the variety of positions assumed by women in the study, the cesarian rate in the national birth center study was half when compared to other similar hospital populations without an increase in neonatal mortality. These impressive findings tend to support that both midwifery care and setting were variables which impacted on the results.

A study conducted in a rural hospital with family physicians compared outcomes from a convenience sample of primiparous and multiparous women. The 335 women in the study were able to choose their birthing positions. Approximately 50% of the women chose to birth in the semi-sitting position, 25% in a birthing chair, another 25% in the lithotomy position, and fewer than 5% used the side-lying position. The rate of intact perineums was close to 37%, with an episiotomy rate close to 44%. The rate of perineal laceration found by the investigators between birthing positions and primiparous women was not significant. A significant ($<.05$) decrease in perineal tears was obtained for multiparous women who used birthing beds when compared to other multiparous women who used the delivery tables (Olson, Olson, & Cox, 1990).

This observation does continue to support the claim previously stated by Caldeyro-Barcia (1975) that the lithotomy position is not beneficial. The benefits of the lithotomy position have been the practitioner's control of the delivery, use of anesthesia, easy access of the perineum for instrumental deliveries (Dundes, 1987) and episiotomies. Nevertheless episiotomies and stirrups have been associated with a significant increase in perineal lacerations. A study conducted with 241 nulliparous women to test whether the use of stirrups together with cutting episiotomies increased third and fourth perineal lacerations concluded that there was not a statistically significant increase in lacerations

when either stirrups or episiotomies were used alone, or when stirrups or episiotomies were not used at all. However when both stirrups (lithotomy position) and episiotomies were used together there was a 27% increase of third and fourth degree lacerations regardless of whether the practitioner was a midwife or a physician (Borgatta, Plening & Cohen, 1989).

An increase in perineal lacerations was also found with a study comparing squatting position to the supine position. A group of 200 women was randomized into either an experimental group (squatting) or a control group (supine). The squatting group experienced a decrease in labor and delivery time, but their cesarean rate doubled and there was an increase in perineal lacerations noted from 14 in the control group to 38 in the experimental group. The authors recommended the use of the supine position or possibly the use of birthing chairs for better perineal support. (Allahbadia & Vaidya 1993).

Relevant to the research findings but not always reported in the literature is how long were the women sitting, standing, or squatting, and whether there were any measures taken to protect or prepare the perineal area of the women. Women's sexual activity and the women's ability to relax and contract their perineal muscles before labor were completely absent from the literature. Comparing multiparous women who previously had an episiotomy with others who have had, in previous deliveries, an intact perineum also can confound the investigations, nevertheless the perineal history of multiparous women was not reported. Other subjective aspects that might effect the women's ability to relax their perineum such as history of sexual abuse, cultural preferences, privacy, and rapport between practitioner and parturient were not addressed in the literature.

Blood loss. The reported relationship between hemorrhages and vertical positions was inconclusive. Studies on kneeling, sitting, or squatting positions reported no significant association between vertical positions and hemorrhages (Gardosi, et al., 1989; Ehrstrom, 1984), while other investigators have found an association between the upright

positions and post partum hemorrhages especially with the use of birthing chairs (Stewart, 1989; Waldenstrom & Gottvall, 1991). The national birth center study (Rooks, et al., 1989) reported only 50 women or 0.5% of their total group as requiring hospital care due to hemorrhage, however, the specific delivery or third stage of labor positions for the women requiring transport were not reported.

The subjectivity of measurement was not uniformly accounted for as possible observer error, and the relationship between third stage positions and hemorrhages was only addressed in one of the studies reviewed. In a trial conducted by Waldenstrom & Gottvall (1991) an explanation was given about why there might be a perceived increase in hemorrhage with vertical positions using a birthing stool. The authors suggested that in the birthing chair group the vertical position aids in the evacuation of blood from the uterus and the vagina and that there are usually less absorbent cloths placed under the birthing chair. In contrast women delivering in the horizontal position are slower in emptying their blood and several layers of absorbent materials are routinely placed under them, which could obscure accurate blood loss measurements. The authors stated that an "increase in hydrostatic pressure both on the arterial and venous side could contribute to increased bleeding from the uterus and the placental site. A change from vertical to horizontal position after the birth of the baby may decrease the risk of postpartum bleeding" (Waldenstrom & Gottvall, 1991, p. 10). A change from the vertical position to a semi-sitting position after the birth has also been recommended by Odont (1984) in order to facilitate comfort, eye contact, and bonding between mother and child. Nevertheless techniques for delivering the placenta, and consideration for maternal comfort and the physiological effect of the positions studied are rarely mentioned in the literature.

Infant outcomes. The infant's outcome indices cited most frequently were: Apgar scores; weights; and pH; however, infant outcome indices were not always included in all the studies on second stage positions. In this review of the literature there were no

correlations found between vertical or side-lying positions and infant's outcome indices (Allahbadia & Vaidya, 1993; Gardosi et al, 1989; Meizack, Belanger & Lacroix, 1991; Stewart & Spidy, 1989; Waldenstrom & Gottvall, 1991). Apgar scores were not affected by a variety of positions including studies comparing squatting versus supine maternal positions (Allahbadia & Vaidya, 1993) or between birthing chair and semirecumbent, supine, "all fours", lateral recumbent, or standing positions (Waldenstrom & Gottvall, 1991). Nevertheless the recumbent or supine position was found by several investigators to have a negative impact on the infant's outcome indices when compared to other positions. For example Roberts (1980a,b) compared different studies on maternal positions and found that there was a relationship between fetal scalp or cord pH and the recumbent position. The infants had higher acid levels in the lithotomy position than in the semi-reclining or side positions. In addition an increase in "fetal hypoxia and bradycardia have been associated with the supine position." (Roberts, 1980a, p.15). She added that "a factor in fetal and newborn acidosis may not only be the duration of second stage position, but also the duration of strenuous bearing down by the parturient." (Roberts, 1980b, p.16).

The ability of women to change positions has an effect on both maternal and infant outcomes. Nevertheless, the ability of women to have freedom of movement and position choices during childbirth are affected by environmental factors.

Conceptual Framework

The conceptual framework used in this investigation was based on ecofeminist theory which served to address concepts in the home birth midwifery paradigm and environmental factors involved in childbirth.

Ecofeminism and the home birth midwifery paradigm. In the early 1970's ecofeminism was proposed as a response to some women's concerns that the primary focus of the feminist movement lacked an articulation about the relationship between women and their local environments. This theory unites concepts from feminist,

ecological, and environmental theories with theological thought to build a comprehensive philosophy of life for both private and public arenas.

The relationship between the oppression of women and the Earth has been conceptualized by ecofeminists as emanating from the same patriarchal ideology (Gaard, 1993). Ecofeminists theorize that the liberation of women can not be accomplished without the concurrent liberation of "nature." Nature is broadly defined as the Earth and all her organic and inorganic forms.

Birth in ecofeminism is viewed as a transformative process that recognizes the ability of the Earth and women to procreate and renew with their cycles. In the home birth movement as in ecofeminism the experience of childbirth is viewed as a natural event in which women have an opportunity to realize themselves within their nature. In ecofeminism there is no conceptual separation between gender and "nature." The question of whether women have an essential nature or that females are closer to nature is denied. Birkeland (1993) states that "The assertion of difference is based on historical socialization and oppression of women, not biologism" (p.23). Nevertheless there are few opportunities in the life of a human being that requires a unification of mind, body, and spirit as in childbirth. Razak (1990) adds that "Birth is a physical ordeal that serves as a model for subsequent rites of passage. It is a model for physical, emotional, and spiritual transcendence" (p. 169) and even though the "physical act of giving birth may be limited to women, the process of birth has emotional significance for all human beings" (Razak, 1990, p. 166).

Childbirth environments. Concern for the environment and its ecology are woven into ecofeminism due to the recognized importance of developing new relationships between humans and the planet and a different view of nature for human survival. From radical feminism, ecofeminists draw the argument that "the perception that women are totally oriented toward biological reproduction degrades them by association with a nature that is itself devalued in Western culture. Women's biology and nature should

instead be celebrated as sources of female power" (Merchant, 1990, p.102). Therefore the nature of women, "nature" around her and thus her environment are all components of childbirth agreed upon by ecofeminists and home birth midwives. Environmental factors such as the setting, its culture, and political issues affecting childbearing women are discussed to fully understand how childbirth environments affect the ability of women to choose different birthing positions.

Childbirth setting. Childbirth settings have been transformed during the last two decades. The alternative birthing center (ABC) rooms instituted in a few progressive USA hospitals in the 1970's were short lived. Only a few ABC rooms survived into the eighties. The trend ahead for the nineties is the substitution of hospital's delivery rooms for labor, delivery and early post partum recovery (LDRP) rooms where mothers and babies are encouraged to stay together and initiate early breast feeding. Along with the LDRP, hospitals are replacing delivery tables with more comfortable "electronic birthing beds." The new beds allow women to deliver sitting up, using a squat bar, or can be quickly changed into a classical delivery table (Davis-Floyd, 1992) when "active management of labor is needed". Even with the development of the "electronic birthing beds" the movement of women continues to be restricted. Often the new beds are made to elevate the women's perineum, and stirrups are easily placed on the beds to support women's legs and to simulate the classical lithotomy table even when "active management of labor" is not required. This happens because the electronic birthing beds are "incorporated into many hospitals without any fundamental accompanying shift in core values and beliefs, (therefore) its potential for empowerment of the birthing woman is often co-opted" (Davis-Floyd, 1992, pp. 124-125). In addition "active management of labor" has been criticized because it has been recommended as a way to decrease labor dystocia without proper investigation of other less invasive methods like walking during labor, squatting for pushing, or midwifery practices (Goer, 1993).

Albers & Katz (1991) pointed out that the improved difference between midwifery

outcomes versus medical outcomes in several studies might be a confounding effect due to care differences, instead of the setting in which they practice. The setting might not have an influence in the care itself if its culture allows practitioners to enact their different care practices including a women centered approach to childbirth. However, the orientation of a culture changes with different settings. For example, homes are family oriented while other childbirth settings like hospitals are oriented towards the culture of the particular institution. The setting and its culture are interconnected and play a role in labor and birth.

Culture of the setting. In a report by Waldenstrom and Gottvall (1991) of a randomized clinical trial using a birth chair the authors elaborated on the effect the staff has on birthing women as they reported: "compliance with the encouraged birth position in the two groups demonstrates that the midwives (or any practitioner) have a great influence on women's behavior during labor and birth" (p. 9). From years of use hospital routines become part of the institution's culture. To accomplish changes in positions the setting of the birth needs to allow for the free movement of women. In hospital settings the staff has greater control of how a woman delivers or what positions are available for her. Conversely, in home births the woman and her family have greater control of the setting and thus of her labor and birth.

Furniture can restrict the spontaneous movement of women. A woman in her home has the autonomy to move from one room to another and to ask for the rearrangement of objects as she desires. In the home privacy is governed by the family's culture and their individual variations. In addition natural childbirth may be facilitated in the home due to a variety of qualities associated with homes that can be mobilized towards the woman . An individual woman's feeling of security can be enhanced with her family's emotional and cultural support. A sense of identity can be provided with her familiarity with the environment and personal objects (Altman & Werner, 1985; Barker et al., 1978). Due to the responsibilities assumed by the woman/couple in a home birth an unification of the

family into the matrix of the woman's experience is required. Homes have been identified by Altman and Werner (1985) as significant in the emotional growth of family units. For a woman to give birth and receive the needed care a commitment from family members is necessary. The woman and her home become central to the family's birth experience. The attention a birthing process brings to a home can create an ambiance of nurturance and respect towards the woman and her children. Childbirth in the home environment strengthens family bonds and traditions. The birth attendants while also respected by the women/couple and their family, remain guests of the family, thus control of the setting is in accord with the birthing woman and her birthing needs and desires.

In hospital settings the woman is not in her territory and thus dependant on her attendants to provide her with a setting that can accommodate to her. Nevertheless attendants and hospitals have rigid rules and rituals that prevent them from encouraging the free movement of women or impinge on the privacy and spontaneity necessary to accomplish natural childbirth. For example one observational hospital study of 50 women who had freedom of movement found that 35 women chose their own birthing position but that the most common position was reclining followed by side-lying, and side reclining. The researchers concluded that "the hesitancy of women in this study to assume upright positions may be due to a combination of factors, including cultural conditioning and the physical properties of the birth room. The fact that a bed was in the birthing room may have strongly implied that the woman should use it. Although instructed to be non directive, the caregiver may have given cues indicating a preference to birth in bed" (Rossi & Lidell, 1985, p. 206). In addition to the improvements made in physical aspects of childbirth settings a change in the behavior of hospital staff is necessary to facilitate natural childbirth.

Practitioners affect the second stage of labor by the continued use of routine pushing instructions of sustained Valsalva maneuvers which are no longer recommended. The spontaneous pushing of women has been studied from the 1950's to the 1980's with

conclusive evidence that when women are able to follow their pushing urges there is a reduction in perineal lacerations and use of instrumental deliveries, and that infant outcomes improve (McKay & Roberts 1985). However forceful pushing instructions of breath holding and sustained effort are routine in hospital deliveries. Liu (1989) conducted a study to verify findings on vertical positions and the effect of bearing down instructions commonly used in hospitals. She assigned three different groups of women to either a semi-sitting group with no bearing down instructions, a semi-sitting group with bearing down instructions, or a recumbent position with bearing down instructions (the control group). The results of her investigation showed that women in both upright groups had shorter first and second stages of labor. The investigator also showed that when women pushed on their own, with no bearing down instructions, the length of second stage was further reduced. Nevertheless Caldeyro-Barcia (1978) found that when women pushed without bearing down instructions second stage of labor was longer but resulted in improved infant outcomes and less maternal perineal trauma than when compared to women who were given closed glottis (Valsalva maneuver) bearing down instructions for pushing.

In a study conducted by Rossi and Lidell (1985), where women allowed to find their own pushing method, 45 out of the 50 women in the study were able to find their own spontaneous technique of pushing and only 7 women used the closed glottis method. The authors recommended that "because hospital nurses are in the position of guiding maternal expulsive efforts, these nurses must realize that when allowed to choose, women may use a variety of approaches in birthing without causing adverse outcomes. Rossi and Lidell stated that "A 'right way' to ensure the best results in childbirth does not exist. However, evidence supports encouraging and suggesting alternative positions and breathing techniques to women in second stage of labor. This requires not only the woman to become an active contributor to birth but demands a willingness on the part of the caregiver to accommodate skills to actual needs of birthing women and of infants."

(p. 207).

However, these research findings and recommendations have done little to change present day hospitals' routines. The intensity of coaching sounds generated by the practitioners overwhelm the woman's facility to retain control of the experience, and in contrast, sounds made by the women are often quieted by care givers. McKay & Roberts (1985) suggested that "Many birth attendants, unaccustomed and uncomfortable with these sounds of effort, prefer to encourage quiet, controlled, forced pushing. Women, too, have been conditioned to the idea that they should suppress any vocalization and, therefore, they may need permission to make noise if it assists bearing-down efforts" (p. 103).

Women's acculturation to childbirth setting and childbirth's societal norms affect women's birth behaviors, while the culture of a setting influences practitioners' care. Women who want to protect themselves from routine procedures make their wishes known by writing birth plans and discussing their care with practitioners in order to outline their preferred mode of care. However, the setting can facilitate the care, or limit the practitioner even when they are in agreement with women's preferences (Klein, 1993). Women are made to "accommodate to hospital physical structures and rules" (Klein, 1993, p. 98). Klein adds that the ability of women to achieve empowerment might be facilitated in the woman's home. In order for childbirth environments to address the influence of settings and their respective cultures policies are required to support research on childbirth environments and the implementation of their findings.

Policies. Odont (1984) has made recommendations based on the successful birthing statistics accumulated in a French hospital under his directorship. The hospital's birth statistics improved dramatically when the delivery unit was changed from a medical unit to a women's suite. Changes in the labor and delivery unit were made on the physical, cultural, and political levels. Renovations in the physical setting included low lights, warm tubs, and low beds in the corner of the rooms that allowed space for the woman to

move about. Changes in the culture of the staff included a commitment to promote privacy during the birth; encourage women to push without forceful bearing down instructions; and facilitate births in vertical positions especially in the supported squat position or in water. Changes in policies included the addition of midwives to the hospital staff as primary attendants. Odont recommended doing away with fancy delivery tables that take most of the space in the birth rooms. Instead he suggested an environment where women can move about freely so that they can follow their bodily urges, and can make uncensored vocalizations. A trust in women's ability to find a comfortable and safe position in which to labor and birth is explicit in his suggestions and is in agreement with home birth midwifery practices.

Operational Description of Concepts and Definitions of Terms

The operational description of several of the concepts, and a definition of terms used in this thesis are presented.

Ecofeminism: This theory unites concepts from feminist, ecological, and environmental theories with theological thought to build a comprehensive philosophy of life, for both private and public arenas. Ecofeminists view childbirth as a transformative process, and an opportunity for self empowerment.

Self empowerment: An individual's ability to use an event for self growth.

Natural biological phenomenon: A universal event in the life of humans that affects biological, emotional, social, and spiritual aspects of a being.

Childbirth: The act of giving birth, conceptualized either as normal or abnormal.

Natural childbirth: Natural biological women's phenomena, conceptualized as normal process in which the birthing woman is central.

Childbirth environment: Childbirth environments are composed of 1) a laboring woman's private space, 2) the birth setting, 3) the socio/cultural influences including family and attendants, and 4) political issues regarding women and childbirth.

A laboring woman's private space. The woman's private space is conceptualized as a woman's unique nature, and her immediate surroundings. The sexuality of the laboring women and their uninhibited expression are considered part of women' childbirth process.

The birth setting. The birth setting is the physical place of the birth. The setting and its culture are belief to influenced and assert an influence on the woman's experience, her birth position, and the outcome of the birth.

Socio/cultural influences of family and attendants. The socio/cultural influences of family and attendants have a significant impact on the woman's maternity cycle especially during the time of birth. Attendants can assert influence on the birth outcome by their own socialization towards birth and their relationship to birthing women.

Political issues affecting birth. Political issues are multifaceted and are associated with how women, their nature and culture are supported. Political issues are reflected by practitioner care, and the choices available to women during labor and birth.

Home birth midwifery paradigm. Home birth midwives seek knowledge in the scientific and intuitive realms, define midwifery as art and science, and acknowledge women' childbirth process without dualistic constructs. Its aims is to enhance natural childbirth as it pertains to the many aspects of women and their home environments.

Home birth midwifery care: Participatory care that integrates the biological, emotional, spiritual, creative, and social aspects of women. It reflects a fundamental belief in women's natural abilities during childbirth, and is characterized by mutuality of expressions. The care changes according to the individual woman, her home setting and culture, and the requirements of each birth.

Flexible birth plan: A birth plan without fixed ideas. Its goals are flexible in order for the birth environment to be in direct accord with the choices of women, and the positions assumed by them during the birth.

Labor: A process in which a pregnant woman opens her womb through rhythmic contractions that increase in length and intensity, to birth her child. There are two phases

of labor, latent phase and active phase.

Active labor first stage: A woman's ability to move and vocalize according to environmental factors to accomplish full dilatation of the cervix, and to facilitate the positioning and descent of the presenting part of the infant.

Active labor second stage: The pushing stage, women may assume a great variety of positions during this time to accommodate the descent of the infant, and to facilitate their pushing urges.

Birth positions: Maternal position for the actual birth of the infant, assumed in the vertical and horizontal plane.

Vertical positions: A birthing positions where the woman's spine is 35 to 90 degrees from the horizontal plane.

Horizontal position: Positions in which the woman's spine is parallel to the horizontal plane, or whose position is less than a 35 degree angle to the horizontal plane.

Perineal area: The external aspect of a woman's vulva from clitoris to anus, composed of skin, muscle and fascia and affected by the women's movement and birthing position.

Perineal Integrity: Refer to measurements of intactness of the perineum Perineal integrity is associated to other muscle bundles, vocalizations, birthing position, and the presentation of the infant.

Immediate post partum period: From the birth of the placenta until mother and infant are stable.

The infant: A sentient being born or unborn.

CHAPTER III

Methodology

This chapter delineates the methodology used in the investigation. It contains a description of the research design, the setting, the sample, the criteria used for inclusion in this research, and techniques for data collection.

Methodology

Design. A retrospective design was used to investigate the following research questions.

1. What were the birth positions assumed by women in their home environment?
2. What variables were associated with the use of vertical and horizontal positions?
3. How did perinatal outcomes compare between vertical and horizontal positions?

Variables. The variables associated with the use of vertical and horizontal positions were parity, ethnicity, and infant's weights. The perinatal outcomes compared between the two groups included maternal and infant results. The maternal outcomes compared between the horizontal and vertical group were length of second stage of labor, perineal integrity and repair, blood loss, and hemorrhage. Apgar scores and resuscitation procedures were the infant outcomes compared between the two groups.

Statistical tests. Outcome indices were entered into Excel computer data management program, and transferred to Crunch Interactive Statistical package for data analysis. Appropriate descriptive statistics were generated for differences in characteristics. Birth positions were grouped as vertical and horizontal. Statistical significance was set at $P < .05$. A t test was used to make quantitative comparisons of the means among variables. For categorical variables the two tailed Fisher's exact test was used when comparing vertical and horizontal groups against one variable, and the Chi-square test was used to compared means of more than one nominal variable (Wilson, 1989).

Setting

The deliveries took place in the women's homes, from 1984 to 1990, in the county of Santa Barbara, California. Although the setting can be generalized to the "woman's home," each home was different ranging from small wood cottages to spacious middle class suburban homes, and included a few elaborate mansions. The women's homes also varied according to culture and level of family involvement, nevertheless there were some general physical and emotional requirements which needed to be fulfilled in planning the home birth.

Physical requirements were: overall cleanliness in the home, the purchase of a mother's birthing kit (Appendix A), a bed covered with plastic lining and freshly made, and space for the midwife's birth equipment (Appendix B). A kitchen stocked with nutritious foods and with sufficient pots to prepare foods, make a post partum sitz bath, and boil instruments was also required.

Emotional requirements were: agreement among family members on the woman's choice of birth setting, and a home ambiance of support during pregnancy, birth and the post partum period. The care particular to home settings included the ability of women to move and make vocalizations during labor and birth, to find their own birthing positions, and to recline after the delivery. A description of the care provided during second stage, for the perineum, and third stage can be found in Appendix C.

Home settings varied not only from home to home but women tended to find their own birthing site within their homes during their first or second stage of labor. Data were not recorded about the specific places used by each women, nevertheless, the general behavior observed was that women often delivered in other than the assigned bedroom. Plans to deliver in a particular bedroom were superseded by the comforts offered by another unplanned site in the woman's home.

Sample

Human subjects assurance. On admission to prenatal care, all patients gave verbal consent to the analysis of their birth outcome data. Each woman was aware of the data which would be utilized, since each was given a copy of her birth summary form at her post partum visit. For the purpose of this research each woman's chart was numbered, and the women were identified by these numbers throughout the study in order to protect the women's anonymity. The research was approved by UCSF Committee on Human Research (H5082-09418-01).

Participants. The group was composed of women (N = 159) aged 15 to 42 years old, with a mean age of 29 years. They were 89% Euro-American (n = 139), with the remaining 11% divided into 7% Mexican heritage (n = 11), 3% Native American (n = 4), 1% Afro-American (n = 1), and 1% Japanese women (n = 1). Although there was ethnic homogeneity within the study group, there were social differences amongst the women. Their insurance status and occupations provided some indications as to the socio/economic variations of the women. Fifty eight percent of the women were insured while 41% were self pay, and approximately 2% were covered by Medi-Cal.

Their occupations included 27% mothers, 8% administrators, 8% teachers, 6% artists, 5% students, 5% secretaries, 3% RNs, 3% counselors, and 3% domestic workers. The remaining women (63%) were employed in a wide variety of occupations representing less than 1% of the total which were for example farmers, attorneys, computer programmers, and child care workers. The reasons why women opted to birth at home varied according to their political, cultural, economic, or religious beliefs but regardless of their individual motivations, all participants were committed to actively participate in their care and to attain natural childbirth in their own environments.

Criteria for sample selection. The sample was a self selected group of women consisting of all maternity patients who after an interview and midwifery evaluation, qualified by: 1) having essentially normal pregnancies, 2) requesting their home as the

preferred site for their delivery, and 3) proceeding a normal first stage of labor. All women were seen by the same physician at or around 36 weeks gestational age for an evaluation, and were otherwise managed by the nurse midwife investigator.

The women who met the study's criteria and delivered at home (N=159) were included in the study. Not included in the study were those who transferred to physician care during their pregnancy, or chose a physician other than the main physician associated with the practice for their routine obstetrical care. Those women who developed complications during the first stage of labor requiring physician care were transported to the hospital, and were not included in the study. Omitted during the second stage of labor were two women transported due to a prolonged second stage. Two women were transferred to the hospital after delivery, one due to hemorrhage and the other for suturing. These two women were retained in this study of positions for second stage of labor.

All infants (N= 156) who delivered at home remained in the study including newborns with complications transferred to the pediatrician. There were no emergency transports of the infants in the first two hours after birth.

Techniques for Data Collection

Data collection. Assessment of second stage progress was performed to insure that maternal and infant health remained within parameters of normalcy. Labor progress was recorded in the labor form (Appendix D). Data from labor progress forms were transcribed into the birth summary forms within the two hours after the birth. Perinatal outcomes, birthing positions, and complications of mother or infant were recorded by the investigator in the birth summary form (Appendix E) also within the first two hours after each delivery.

Data management. The positions for second stage were categorized into two broad categories. The participants assumed several positions during second stage. The maternal position recorded for this study was that position assumed for the actual birth of

the infant which was not necessarily the position the women used during pushing. If the maternal position changed during the actual delivery the persistent position assumed by the mother while delivering the infant was the one recorded as birth position. Criteria for vertical and horizontal positions consisted of a differentiation between the angle of the woman's spine and the horizontal plane. A zero degree angle and up to a 35 degree variation between the woman's spine and the horizontal plane were considered horizontal positions, angles greater than 35 degrees from the horizontal plane were considered vertical positions.

The injuries to perineal tissue were classified as "intact" or "all others." "Intact" included abrasions and swelling. "All others" included first, second, third, or fourth degrees of tearing severity, according to the layers of tissue involvement. Blood loss was measured by cc's; an estimated blood loss greater than 500cc was considered a hemorrhage.

The weight of the infants was taken within the first two hours after delivery. The newborn weights were divided into three groups to compare the rate of low birth weight, average weight, and large infants between the vertical and horizontal groups. The infant's weight groups were: less than 6lbs, equal or more than 9lbs, and all others infants. Apgar scores were recorded at one and five minutes after the infants birth. The Apgar scores were also grouped to investigate whether the horizontal or the vertical group had an increase in depressed infants. One minute scores were grouped into 6 or less, and equal or more than 7. Five minute scores were grouped into 7 or less, and equal or more than 8. Infants with scores of 6 or less at one minute, or 7 or less at 5 minutes required continued monitoring and intervention. These interventions were categorized under resuscitation procedures.

Newborn resuscitation procedures were divided into Level 1, 2, or 3. In level 1 the baby was placed on the mothers' abdomen and required nothing other than a warm blanket. Level 2 included tactile stimulation, suctioning of infant's nares with a bulb

syringe, or both, and Level 3 included any other procedure performed in an effort to resuscitate the newborn or to prevent aspiration. The resuscitation procedures included in level 3 were: tactile stimulation with suctioning and oxygen administered by blowing close to infant's nose, or oxygen administered by mask with tactile stimulation and the use of a DeLee suction trap to suction the infant's nares, trachea and stomach contents; or neonatal cardio pulmonary resuscitation. Procedures to prevent aspiration included deep suctioning of nares and trachea while the infant's head was delivered or/and deep suctioning of nares and trachea after the infant's delivery.

Instrument. Data were entered into a birth summary form (Appendix E) developed by the investigator. Data from the birth summaries were compiled retrospectively and entered into a data management program.

Validity and reliability of instrument. The birth summary form (BSF) was developed by the investigator to identify childbirth outcome indices of commonly identified variables. Content validity of the BSF was assured by obtaining ten childbirth summary forms, from the American College of Nurse Midwives' research committee in 1984, which were then currently in use by several midwifery services across the USA.

Relevant perinatal outcome indices pertained to a home birth population were identified, and the form was revised to record the measurement of these indices. Construct validity was obtained by a review from several midwives, obstetricians, and pediatricians to verify its content and readability. The BSF was found to adequately reflect the birth outcomes of interest for the midwifery practice and to provide data for future research.

Psychometric testing was not done on the data collection instrument. Reliability in application of the instrument was insured because the researcher completed all of the birth summary forms.

CHAPTER IV

Results

This chapter describes the findings of the investigation, presents the characteristics of the sample and enumerates second stage positions in the vertical and horizontal groups. The data analysis of vertical and horizontal positions according to each maternal and infant perinatal outcome variable are presented, and relevant ecofeminist variables are provided.

What were the birth positions?

The total birth positions are presented first as one group, and the individual positions assumed by the women are subgrouped into categories. The positions are then divided, according to the criteria for the study, into the vertical and horizontal groups, and the positions comprising the horizontal and vertical groups and each of their subcategories are enumerated.

Birth Positions. Women (N= 156) in the study assumed a wide variety of birthing positions. The most frequent position used by the women in the sample were (29%) semi-sitting, followed by (18%) squatting, (16%) hands and knees, (13%) side-lying, (10%) sitting. The most infrequent positions used were (7%) supine, (5%) standing , and (1%) kneeling (Table 1).

The women who delivered in the standing position were divided into vertical and horizontal groups. Women who assumed an erect stance were grouped under vertical, while those who leaned over the bed at an angle less than a 35 degree from the horizontal plane were placed in the horizontal group.

Vertical group. Sixty two percent of the women (N = 96) were placed in the vertical group which included those women whose birth position was greater than 35 degrees to the horizontal plane. The longitudinal axis of the mother and infant and the pushing effort of the women were aligned with the force of gravity in vertical positions (Table 2).

Table 1

Positions for birth

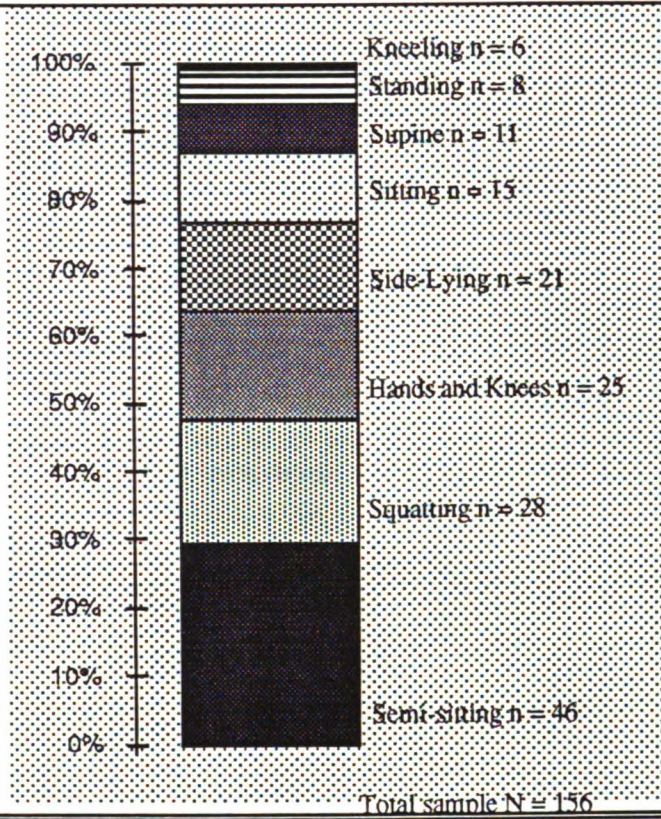


Table 2
Vertical Group Total (N= 96)

Semi-sitting (n = 46)		
	semi-sitting	n = 45
	asymmetrical semi sitting	n= 1
Squatting (n = 28)		
	squatting	n= 11
	supported squat	n= 5
	standing squat	n= 5
	semi- squat	n= 4
	sitting semi-squat	n= 3
Sitting (n = 15)		
	sitting	n= 6
	sitting on other's knee	n= 4
	sitting on one side	n= 2
	supported sitting	n= 1
	birth stool	n= 1
	toilet	n= 1
Standing (n = 5)		
	standing	n= 4
	standing one leg on chair	n= 1
Kneeling (n= 2)		

Horizontal group. Thirty eight percent of the women were placed in the horizontal group(N=60), which included all women whose positions for birth was 35 degrees or less to the horizontal plane. In such positions the longitudinal axis of the mother and infant were not aligned with the force of gravity, nor the pushing effort of the women. In the supine positions there was greater weight on the spine of the women, making spinal movements cumbersome. In the other horizontal positions, however, the weight of the uterus was away from the woman's spine, allowing for its greater mobility (Table 3).

Table 3
Horizontal Group Total (N= 60)

Hands and Knees (n = 25)	
hands and knees	n = 24
hands and knees low	n = 1
Side laying (n = 21)	
Supine (n = 11)	
supine	n = 9
supine with knees flexed	n = 2
Standing leaning (n = 3)	

What variables were associated with the use of vertical and horizontal positions?

The variables associated with the vertical and horizontal groups were demographic, including parity and ethnicity (Table 4), and infants' weights (Table 5).

Parity. There were 57 nulliparous women who represented 36% of the total (Table 4). They most often assumed the squatting, hands and knees, semi-sitting, side-lying, and sitting positions, while the least used positions were standing, supine, and kneeling.

Multiparous women totaled 99 (64%) of the group and included those women who had given birth to one previous infant (34%), two (19%), three (7%), four (3%). None of the women had had five previous full term infants, and one woman (1%) had six full term

infants. The multiparous women favored the semi-sitting position, followed by squatting, hands and knees, side-lying, supine, and sitting. The positions least used by multiparous women were standing and kneeling. Of all the women who chose the supine position 8 (82%) were multiparous.

Ethnicity. The Euro-American women and the women of color were equally divided between the vertical and horizontal groups (Table 4). The predominate position chosen by women regardless of ethnicity was the semisitting position. However the women of color in this study chose after semi-sitting the sitting, squatting and supine positions, while the Euro-American women preferred squatting, hand and knees, and side laying.

Table 4
Vertical (N= 96) and Horizontal (N = 60) Demographic Characteristics

Parity	Nulliparous	Multiparous
Vertical	35 (36%)	61 (63%)
Horizontal	22 (37%)	38 (63%)
Ethnicity	EuroAmerican	All others
Vertical	85 (89%)	11 (11%)
Horizontal	54 (90%)	6 (10%)

Infant weights. Infants weights were similar between the two groups (Table 5). The mean weight was 3549 grams or 7 lb. 8 oz. One percent of the infants weighed less than 6 pounds, 88% of the infants weighing from 6 to 9 lbs, and 17% of the infants weighing more than 9 pounds.

The smallest infant weighted 2014 grams or 4 lbs 4 oz; this infant was full term but with an under developed placenta which retarded his growth. He was placed under pediatric home care immediately after birth, was breast feed, and proceeded to have normal development. The largest infant weighed 4819 grams or 10 lbs 6 oz. All large for

gestational age infants had normal 3 day course.

Table 5
Infant Weight

	Mean	SD	Statistical Test	P
			T Test	NS
Vertical	3554 grams	411 grams		
Horizontal	3560 grams	499 grams		

How did perinatal outcomes compare between vertical and horizontal positions?

The perinatal outcome between the vertical and horizontal group are compared. The maternal outcomes are presented first followed by infant outcomes, and a brief description is added for clarification when appropriate.

Length of second stage of labor. The length of labor had a significant difference of 17 minutes ($p < .002$) longer in the vertical group (Table 6). The frequency distribution of second stage were: forty one per cent (41%) precipitous second stage of 2 to 20 minutes, 26% from 20 to 40 minutes, 23% greater than 40 minutes to one hour, 14% from 1 to 2 hours and 1% of the women had a second stage longer than one hour. Second stage of labor length was further divided into less than 2 hours and more than two hours, and analyzed by Fisher's exact test to investigate if there was a significant difference between the vertical and horizontal groups on both of the time parameters. since a second stage of labor longer than 2 hours is considered prolonged. There were no differences found between the groups for the women who pushed less than two hours. There were 10 women who had a second stage of labor longer than two hours, with a significant difference of $p < .004$ obtained between the vertical and horizontal groups. Of the 10 women (8 nulliparous and 2 multiparous) who experienced a prolonged second stage of labor 90% ($n = 9$) were in the vertical group (squatting position), and 10% ($n = 1$) in the horizontal groups (hands and knees position).

Table 6
Total length of second stage of labor

	Mean	SD	Statistical Test	
			T Test	P < .002
Vertical	49 min	57 min		
Horizontal	33 min	29 min		

Perineum. The horizontal and the vertical groups rated similarly in perineal integrity and laceration rates (Table 7). Sixty percent (60%) of the women (n = 92) delivered with an intact perineum, of that group 47% had full tissue integrity and 12% had minor abrasions or swelling. Two episiotomies were performed; they were in the semi-sitting group. In addition there were two incidents of third degree lacerations one in the semi-sitting group and one in the squatting group. There were no fourth degree lacerations.

Table 7
Perineum

	Intact	All others	Statistical Test	P
			Fisher's Exact Test	NS
Vertical	55 (58%)	39 (41%)		
Horizontal	37 (62%)	23 (38%)		

Repairs. There were no significant differences in the repair rate between the groups (Table 8). The rate of repair was 34% among all women who experienced a first, second, or third degree laceration or episiotomy; of these, 60% were in the vertical group and 40% in the horizontal group. However, in the vertical group 31 of 39 women who experienced lacerations were in need of repair, while in the horizontal group 21 out of 23 women were repaired.

Table 8
Perineal Repairs

	None	Repaired	Statistical Test	P
			Fisher's Exact Test	NS
Vertical	63 (67%)	31 (33%)		
Horizontal	38 (64%)	21 (36%)		

Blood loss. Blood loss was not shown to be significant between the groups (Table 9); Nevertheless, the vertical group had a mean increase of 42cc compared to the horizontal group.

Table 9
Estimated Blood Loss

	Mean	SD	Statistical Test	P
			T Test	NS
Vertical	246cc	151		
Horizontal	204cc	131		

Hemorrhage. There was no significance found between the groups (Table 10). The overall post partum hemorrhage rate was 5% (n = 7). Five of the women who had a hemorrhage were in the vertical group while, 2 were in the horizontal group. Eighty one percent (81%) of the women had a second stage of less than 30 minutes, and 1% of the women (n = 1) had a third stage greater than one hour. The positions for third stage were not identified; however, women who experienced a prolonged third stage assumed a vertical position for the delivery of the placenta. Hemorrhage per position for second stage were kneeling (n = 1), squatting (n = 4), and side (n = 2). One woman was transported to the hospital due to postpartum hemorrhage. Although the hemorrhage had been controlled at home, the woman was in need of observation and intravenous

hydration, and was kept in the hospital 36 hours.

Table 10
Hemorrhage (N = 7)

	> 500cc	< 500cc	Statistical Test	P
			T Test	NS
Vertical	5 (6%)	83 (94%)		
Horizontal	2 (3%)	58 (97%)		

One minute Apgar scores. There were no significant difference found between the groups (Table 11). The infants who had Apgar scores less than 6 at one minute received level 2 or level 3 resuscitation procedures. These procedures are described under infant resuscitation. All infants with Apgar scores of 6 or less at one minute recovered well.

Table 11
1 min Infant Apgar scores

	6 or less	7 or more	Statistical Test	P
			Fisher's Exact Test	NS
Vertical	7 (7%)	86 (93%)		
Horizontal	7 (12%)	53 (88%)		

Five minute Apgar scores. There were no significant difference found between the groups (Table 12). Two infants had Apgar scores less than 8 at 5 minutes. One infant had a shoulder dystocia complicated by a prolapsed cord protruding from the neck but not a nuckal cord. This infant received CPR after the shoulder dystocia was managed by a change in maternal position from squatting to hands and knees. This permitted the shoulders of the infant to be rotated; the mother then assumed a kneeling squat for the birth. The infant subsequently had an Apgar of 0 at 1 minute, 5 at 5 minutes, and 9 at 10 minutes. Emergency transport was initiated; however, the pediatrician made an

emergency home visit, and the infant was kept at home under pediatric care and has developed within normal parameters. The other infant had an Apgar score of 7 at 1 minute, 7 at 5 minutes, and 9 at 10 minutes. This infant received tactile stimulation and had no further complications. There was one infant hospitalized within the first 6 hours after the birth. This infant was diagnosed with Downs Syndrome complicated with an esophageal atresia . He was delivered in the semi-sitting position, his Apgar scores and weight were normal. This was the only infant who needed hospitalization within the first 24 hours after the delivery of the total sample.

Table 12
5 min Infant Apgar scores

	7 or less	8 or more	Statistical Test	P
			Fisher's Exact Test	NS
Vertical	2 (2%)	91 (98%)		
Horizontal	0%	60 (100%)		

Infant Resuscitation. There was no statistical difference between the groups (Table 13). Sixty four percent (64%) of all infants (n = 98) received level 1 procedure which was to place the infant on the mother's arms and covered with no further intervention. Thirty one percent (31%) of the infants (n = 47) received level 2 procedure which included either tactile stimulation, suctioning the nares with an infant bulb syringe, or both. Level 3 resuscitation procedures were initiated in 5% (n = 7) of the infants. One infant received CPR as described above, two infants were suction with a DeeLee trap (their maternal postures for second stage were sitting and semi-sitting); and three infants were suctioned with a DeeLee on the perineum (their maternal positions were kneeling, squatting, and side-laying). The most common reason for suctioning was meconium stained fluids. One infant had dark meconium, and 9 had light stained fluids; they were either suctioned with a DeeLee as described, or a bulb was used if appropriate. In

addition one infant (born in a standing maternal position) received oxygen due to grunting.

Table 13
Infant Resuscitation

	Level 1	Level 2	Level 3	Statistical Test	P
				Chi-Square	NS
Vertical	61 (66%)	25 (27%)	6 (6%)		
Horizontal	37 (62%)	22 (37%)	1 (2%)		

CHAPTER V

Discussion

This chapter summarizes the results of vertical and horizontal second stage positions, and indicates the strengths and limitations of the research. This chapter also addresses ethical issues, theory development, and implications for research, and practice.

Results of Vertical and Horizontal Second Stage Positions

Women in this study assumed a wide variety of positions for second stage with favorable maternal and infant outcomes. Vertical positions were assumed by the women with a higher frequency (62%) than horizontal positions (38%), although the parity and ethnic distributions of the women were similar between the two groups. Women in this study were primarily middle class, educated, and Euro-American. These results seem to indicate that women regardless of parity and ethnicity chose vertical over horizontal positions.

Kneeling, standing, and supine positions were the least favored positions by this group of women. All positions except for supine, in the horizontal group, allowed for spinal mobility. The societal acculturation of women to the hospital's supine "norm" did not have an impact on the positions chosen by the majority of the women. Although a greater number of multiparous women did use the supine position, the number of women in the supine group was too small to derive any conclusions. The least used position for second stage of labor in this population of women was kneeling ($n = 6$). The frequency of standing births in this study ($n = 8$) was close to the frequency of supine positions ($n = 11$). However in the literature reviewed standing positions were rarely depicted while the supine position was referred to as the "norm." Although the supine position did not have a deleterious effect on infant outcomes as in previous studies, the supine position however, was not substantiated as the "norm" in this investigation. There was no one "norm" found in this study but a cluster of positions used in 77% of the births. These were the semi-sitting, squatting, hands and knees, and side-lying positions.

The variety of positions denotes the ability of the women to obtain naturally and spontaneously the best position for their birth. Smith et al. (1991) has added that "There is good evidence that position change is useful in achieving good progress in labor, is well tolerated, and can be safely accomplished. Position change may be more important than a single 'best' position" (p. 287). Comfort-seeking behavior was not tested in this research; nevertheless, women were free to move and vocalize to find comfort. Comfort has been associated with maternal position changes in several studies. Caldeyro-Barcia (1979) demonstrated that vertical positions were more comfortable than supine. Roberts (1980a, 1980b), in a review of the literature, indicated that there were conflicting results about which position was most comfortable for all women. To be comfortable women in the present study assumed a variety of positions at different times during their labor. These freedom of movement during labor and birth allowed the women to find her most comfortable position and thus women did not receive any medication for pain relief. Pain was reduced with position changes, massage, relaxed breathing, vocalizations, and water immersion. The women also used position changes in this study to augment their labor.

Women augment their labors with position change, pelvic rocking, and walking behaviors which were encouraged by the birth team. Fenwick and Simkin (1987) have stated that: "When a laboring woman walks, her pelvic dimensions change; alternate weight-bearing on each leg shifts the pressures and changes the shape of the pelvis, thus encouraging rotation and descent of the fetus" (p. 87). Freedom of movement during labor and birth and allowing women to find the positions most appropriate for their needs may have contributed to the low maternal and infant morbidity outcomes identified in this study.

Perinatal outcomes. No significant differences were found between the vertical and horizontal groups on maternal blood loss, perineal integrity, or repair. These are significant study findings unlike those reviewed in the literature. The identified outcome variables compared favorably with other in-hospital position studies and with out-of-

hospital results. For example, Rooks reported in the National Birth Center study (1989) less intact perineums than were obtained in the present study (34% vs. 60% in this study) but a similar low incidence of third-degree lacerations. The national study also reported a much higher episiotomy rate (17% vs. 2% in this study), and there were no fourth degree laceration in the current study.

Maternal outcomes did show a 17 minute mean increase in the length of second stage of labor in the vertical group. Length of labor was the only outcome that was significantly different between the vertical and horizontal groups. However the difference found between the vertical and horizontal group in the present study of 17-minutes is not clinically significant. The mean length of labor time in the vertical group showed a small difference and compared favorably with other research on length of second stage of labor. For example, in a study conducted by Liu (1989), the mean duration of second stage of labor of women in the semi-sitting group who were not given pushing instructions was 42 minutes, while the mean duration of second stage of labor in the vertical group in the present study was 49 minutes. In the Liu study the difference between the semi-sitting groups with no pushing instructions and the semi-sitting group with pushing instructions was 26 minutes, although women who had a prolonged second stage of more than 2 hours in the present study were more likely to receive pushing instructions as a form of intervention.

Prolonged second stage of labor was generally augmented by a maternal change to vertical positions and pushing instructions with no significant changes noted in infant outcomes. This shift in positions was a confounding variable associated with comfort-seeking behaviors of women and the style of care provided by the midwife/investigator, which utilized vertical positions to take advantage of gravity during a prolonged second stage. This could account for the difference in length of labor between the two groups. The infants in the vertical group who experienced longer labors than those in the horizontal group did not show a negative consequence to the longer labor as assessed by

their Apgars scores. The infant's perinatal outcomes were similar in the two groups.

Infant outcomes also compared favorably to those in the literature.

Infants outcomes. The three levels of resuscitation procedures reported in this study have not been previously reported in the literature. Sixty-four percent of the infants did not require any intervention. Suctioning infants with a bulb syringe and tactile stimulation, as is done routinely in hospitals, was considered an intervention in this study and classified as Level 2. Thirty one percent of the infants received tactile stimulation, suctioning with a bulb syringe, or a combination of both. In one study comparing upright to recumbent positions, the infant's Apgar scores of less than 7 at 1 minute were reported as 5% in the vertical group and 10% in the recumbent group (Gardosi et al., 1989). When comparing these results with the present study, 1 minute Apgar scores of less than 7, were 7% in the vertical group and 12% in the horizontal group. The 5 minute Apgar scores of less than 8 in this study were 2% in the vertical group and 0% in the horizontal group. whereas Gardasi's (1989) 5 minute Apgar scores of 8 or less were 3% in the vertical group and 5% in his horizontal group. Although Gardasi grouped the semi-sitting women in the recumbent group and this study grouped them in the vertical group, the 5 minute Apgar scores were not uniformly defined between the two studies, and the birth settings also were different (hospital vs. home), the Apgar scores in this study are consistent with or showed an improvement when compared to those reviewed in the literature. These results suggest how it might not be necessary to use a Level 2 intervention for all infants as is now the norm in most hospitals.

The various positions the women assumed during the research, the variation within categories, and the ability of the midwife to facilitate birth in the woman's chosen position substantiate the conclusion that no one position is best for birth. Only that position chosen by the mother for her particular birth is the best position for her and her infant. The favorable maternal and infant outcomes obtained in this investigation were influenced by environmental variables that supported the choices of women and natural

childbirth.

Strengths and Limitations

This study provided an expanded view of childbirth in a woman's environment. Childbirth environments were identified as interactive and as having an impact on how women labor and give birth. As noted in the review of the literature, environmental variables influence the women's choice of childbirth positions. The positions assumed by women during this study were accomplished within an ecofeminist framework that encourages natural childbirth. Research based on feminist theory includes the subjective and objective findings of an investigation. In addition, ecofeminism is concerned with environmental aspects and the interconnection of all life. This study, although retrospective in, provides a conceptual shift from contemporary maternity care practice and research. A regard for the woman's birth environment is considered essential for natural birth, as is the facilitation of the woman's choice of positions during childbirth.

The environmental factors addressed in this research represent confounding variables which have been reduced in this investigation by comparing the outcomes between vertical and horizontal birthing positions of a group of women within the same health care paradigm. Due to the retrospective design of this research, confounding variables cannot be tested, and a power analysis was not conducted. Environmental variables comprise a field of inquiry that is concerned with how environmental conditions influence women's choices and childbirth positions, and limit research replicability and external validity. The confounding variables were the laboring woman's private space; the setting and its culture, including the woman's family, partner involvement, and practitioner's care; and political issues affecting the birth.

A laboring woman's private space Women during childbirth required various levels of privacy in which to labor in order to follow the promptings of their bodies and people within the childbirth environment who trusted and encouraged the women's laboring and birthing processes.

Birth outcomes were related to environmental support of the woman's ability to follow her process in order to find the best birthing positions. Women assumed their birth positions as a continuation of their unencumbered labor movements and their accompanying vocalizations. These natural process unfolded in relation to the practitioner's ability to promote and facilitate natural childbirth. Women in the study were drawn from a population which self-selected home birth midwifery practice, shared the midwife's belief in natural childbirth, and were screened as having essentially normal pregnancies and labor. The shared conceptualization of labor and birth as a natural process taking place in a natural setting, allowed for interaction at many levels involved in birthing. In addition, women and their families experienced maturation of their beliefs in natural childbirth through attendance at monthly prenatal educational sessions, where other couples who had participated in natural childbirth presented their own case histories. These educational sessions served to inspire the women and allowed the investigator/midwife to share her own birthing philosophy with them. This care philosophy is described in Appendix F. Generalization of this research can only be made to women who are highly motivated to accomplish their birth at home, therefore, oriented toward healthy life styles, and who have environments that support their natural process. External validity also was confounded by the homogeneity of the sample. The relationship between the women's ability to choose their birthing positions and the birth setting, its culture and the political issues affecting the birth were all integral components of the qualities afforded to the private space of laboring women by the home environment.

The birth setting. In this research, the mother's home was used for 94% of the births, and the grandparent's homes for 6% of the births. The qualities of the home setting represent both a limitation and a strength of the study. The women' movement and their choice in birthing positions were facilitated by the cooperation obtained in the home. Women were able to accommodate the needs of their labors in an environment that was

supportive of their efforts. The physical and emotional health of the mother and her family also were promoted by the utilization of the home as the birth setting. Privacy was ensured, for example, and the desires of the women to birth in the positions of their choice were easily followed. In addition the ability of women to belief in Natural childbirth was validated by their choice in birth setting.

Culture of the setting. Mother and child unity were protected while family traditions were incorporated into the birth due to their close association with the birth setting. The care provided was family centered and participatory and respect for the woman, her culture, and traditions were maintained during the childbirth process. Partner involvement and family assistance were incorporated as necessary component of the childbirth team.

Internal validity was limited to women and their attendants (family and midwives) who placed trust in the women's ability to have natural childbirth. The women and miwifew utilized movement and vertical positions to facilitate the birth. The midwife's care changed according to the individual culture of the home setting and the needs expressed by the woman and her family. Women requested that the attendants use the resources available in the home instead of medical intervention to maintain the parameters of normalcy. The birthing positions were a continuation of the women's ability to move, vocalize, and find the birth positions of their choice. Position changes and the physiologic benefits of vertical positions were utilized to facilitate the pushing efforts of the women; the women chose how to push. In addition, the midwife/investigator attending the births developed the ability to improvise with the circumstances of the birth to facilitate the woman's birthing resources and to receive the infant in a variety of birthing positions.

The main purpose of midwifery care was to enhance the women's birth, whether it was physical, emotional, spiritual, or some combination. The midwifery care during childbirth included the midwife's capacity to be alert and relaxed at the same time;

acquire a healthy balance between faith, intuition, knowledge, and skill; explore her own creative capacity to discreetly know the level of interaction required during each birth; and create care attitudes that were flexible within the midwife's knowledge of childbirth. These practices represent confounding of the study, since there is no documentation in this study to validate how the interactive care was provided, how vertical positions were utilized to resolve labor dystocia, or how many women received pushing instructions during prolonged second stage. An additional limitation was that the midwife/investigator evaluated the infant's Apgar scores and blood loss, which are subjective measures and could have a potential for bias in data collection; nevertheless, internal consistency was assured with the birth assistant contributing to the maternal and infant outcome evaluations to insure accuracy of diagnosis.

Ethical and Political Issues Affecting Childbirth.

There are several ethical concerns that this investigation addressed, including the use of the “norm” in research designs that investigate the viability of positions for birth, how the culture of the birth setting affects position choices during childbirth, and the policies that restrict choice during childbirth.

Researchers who have investigated maternal and infant outcomes associated with second stage positions either have used an experimental design or a descriptive comparative design. Studies which have a higher level of experimental control rarely have dealt with environmental influences or categorized birthing positions as vertical or horizontal. Instead, one position, usually supine, has been compared to another position. In randomized control designs, the control group of women usually deliver in the lithotomy position and the experimental group of women in an “alternative” position (Allahbadia & Vaidya, 1993; Stewart & Spidy, 1989). Nevertheless, as addressed in Chapter 2, the rationale used to establish the lithotomy position as the “norm” does not have objective validation. In addition to limit women's ability to move in labor and their choices in birthing positions have ethical and methodological ramifications that need to

be considered. For example, Waldenstrom and Gottvall (1991) conducted a randomized trial of second-stage positions that compared the use of a birthing chair to the semi-recumbent position. They explained that "the management of carefully controlled trials of maternal position in labor is especially difficult because of ethical concerns about restricting maternal behavior at this highly sensitive time" (p. 5). The use of a descriptive comparative design where women assume their own birthing positions does address this ethical concern.

Confounding variables such as practitioner and staff bias, and the effect of the setting, often have lacked identification in prior investigations. The investigation of women's birth in their own environments therefore, can provide researchers with a variety of previously ignored variables. The culture of a setting such as attendant attitudes, societal norms, and policies that sustain the "norm," can exert an influence on childbirth choices. They are highly subjective variables and difficult to control. However, how a setting and its practitioners impact on maternal and infant outcomes cannot be overlooked in favor of more controllable indices. Objective indices of safety, such as length of labor, perineal lacerations, blood loss and infant Apgar scores have been used in research to establish the viability of birthing positions. Nevertheless, blood loss and Apgar scores are subject to the care and interpretation of the attendants. Addition factors, such as nurses' or practitioner's comfort level regarding different delivery positions, are confounding variables which need further investigation to assess how the culture of the setting affects perinatal outcomes and women's choices.

In this study, childbirth was conceptualized as a natural process. Responsibility for natural childbirth was mutually shared among the woman/couple, midwife, and family. In the home birth paradigm. The goal is the well-being of women and children within a supportive family home. This goal is achieved through a process that enhances the ability of women to empower themselves during their pregnancy, labor, birth, postpartum and mothering cycles. Birth, life, and death are understood as interrelated and continuous

processes affecting each human being and perceived by each human according to cultural, religious, and societal beliefs. The women, her partner, and family in this study were in charge of the experience, while the midwife provided assistance as required. During the birth, the birthing women's movements and sounds intensified as labor progressed from one stage to the next and culminated in the birth of the infant. The midwife/investigator accommodated the women and provided care suggestions in accord with each woman's birthing process, which included the use of physiological interventions to promote natural childbirth.

Although home births were in keeping with the women's values and beliefs in natural birth, home birth in the United States is not the predominant cultural or societal norm. Here and in other industrialized countries, there are economic and political reasons that support the belief that all women require medical and technological intervention during childbirth. The belief in birth as a natural process is therefore outside the societal norm. Public policies in this century tend to fund medical institutions instead of home midwifery care and often deny access of trained attendants to women requesting home birth. The women, families, and midwives who participate in home births share life and death responsibilities within the family (but outside society) thus enacting their beliefs in the woman's birth process as a natural phenomenon that can best be maintained in the woman's environment and within the family.

The childbirth environment and the home birth paradigm cannot be fully understood until society changes its conceptualization of birth as abnormal and the view that non-hospital births are dangerous. Society needs to become aware that the transition from home birth to hospital birth has lacked scientific investigation (Smith, Ruffin, & Green, 1993), and that current scientific evidence shows out-of-hospital birth centers and planned home births with experienced midwives decrease morbidity and have equal or better mortality outcomes than similar hospital populations as previously cited. The lack of information regarding home births, the concept of the birth "norm" as a condition

requiring medical intervention, and the restriction of birth settings represent ethical infringements on maternal and infant health and the practice of midwifery.

Theory Development

Theory regarding birthing practice in society and the policies that support what is considered "normal" versus "natural" are of paramount importance to the health of families. A theoretical base for childbirth that acknowledges women's experiences; promotes the individuality of women within each woman's cultural context; and conceptualizes birth as a natural process involving the well-being of women, children, and families has lacked articulation and is in need of development. The home birth midwifery paradigm explored from an ecofeminist framework, a theoretical base for home birth, and natural childbirth in general need further articulation as well. The concepts used in this investigation can be described, but cannot be tested in a retrospective design.

Implications for Research and Practice

Whether a family's culture and tradition can be facilitated in settings other than the home will depend on practices based on research of environmental variables. The environmental variables confounding this investigation need to be further articulated and operationalized in future research, which will have to test the validity and applicability of these concepts to practice.

Research. Research to understand birth as a natural phenomenon, the environment that supports a healthy childbirth process, and the long-term effects of a positive birthing and mothering experience are needed. The role freedom of movement plays on woman's position choice, practitioner bias and hospital routines, and the influence of different settings have not been addressed as confounding variables affecting perinatal outcomes in research methodologies. Environmental variables and their influence on the woman's birth position and perinatal outcome also need further study.

The variables in this investigation will need to be tested. The following research

examples could be used to test selected environmental variables of results from this study and ecofeminist theory in hospital settings. For example to investigate the influence of the physical setting on childbirth positions, a hospital could easily move a birthing bed to the side of one room for the experimental group, and keep the bed in the center of the room in the control group. This research could provide a better look at the effect of the physical setting on positions for second stage of labor with a randomized sample population who chooses which positions are best for their birth.

How much freedom women have, even when the physical setting is changed to accommodate their choices, depends on the culture of the setting. The culture of the childbirth setting and the care provided by home birth midwives could be given a trial in hospital settings. Home midwifery care as the use of vertical positions to augment labor and resolve second stage dystocia have not been previously investigated. These variations in care practices could be examined within an experimental design to test the effectiveness of medical or home midwifery care practices within the same hospital setting. The staff in the control group would remain the same, while the staff in the experimental group would require a series of inservice educational classes to become acquainted with midwifery care practices and the ability of the woman to deliver in the position of her choice. Although difficult to design, such a study could provide some clarity on the culture of the setting within a randomized experimental design. In addition, the care provided by home birth midwives in terms of perennial preparation, perennial tissue integrity, and the prevention of lacerations have not been part of the routine perineal care given to women delivering in hospitals. How home birth midwifery care improves the integrity of the tissue and decreases lacerations needs further study.

Future research about childbirth also needs to investigate variables that promote natural childbirth; what support systems are in agreement with women's choices, how to perceive birth as a natural process; and the reactions of women to their birth experience, including women's satisfaction, comfort, empowerment, and family bonding. Further

research to fill the gap of knowledge that has developed because of the transition from midwifery care to obstetrical care is needed, and the practical implementation of research findings to change routines or rituals in hospitals birth settings.

Practice. The benefits of movement during labor and birth have been well documented by research findings; however, contemporary childbirth practices have not utilized these findings. Changes in hospital settings are necessary, and these changes need to include both physical and cultural transformations in birth environments.

Practitioners need to update their skills to facilitate births in the various positions women can assume during second stage. In addition, practitioners could learn how to use these positions to augment labor or resolve labor dystocia. Care provided by childbirth attendants, whether they are midwives, doctors, or nurses, should be free of ritualized behaviors that control women. Not allowing a women to move or vocalize during labor and birth, giving forceful commands during pushing, requiring women to assume a particular position for labor or birth, limiting family involvement, and depriving women of cultural preferences are all examples of practitioner ritualized behaviors that lead to women' decreased satisfaction as well as increased morbidity. The continued use of interventions, technologies, and routines that increase the morbidity of women but have no scientific proof as to their benefit should be discontinued. Whether current birthing practices should incorporate a variety of birthing positions into intrapartum care depends on a shift in birthing ideology that acknowledges the nature of women and women's processes.

Home birth midwifery care and the experiences of the midwives involved in natural childbirth could be utilized to serve as guides to practitioners willing to learn how to facilitate women's childbirth experiences. The home birth midwifery paradigm presented in this study supports natural childbirth from a women's perspective. The relationship between practitioner and client has the elements of mutuality, choice, participation, and respect. The care acknowledges women during childbirth and protects the birthing

woman's privacy, process, relationships, and culture. When practitioner intervention becomes necessary, physiological and emotional processes are evaluated and modified before other forms of therapies are implemented. The relationship between women/couple's sexuality and their ability to develop a familiarity with their bodies and to follow their natural bodily urges during childbirth should be incorporated into the care. None of these care practices have however been addressed by contemporary maternity services.

A change in childbirth policies could provide women with the required space and attendants necessary to accomplish labor where they have freedom of movement, are able to vocalize, find their own birthing position, and push at will. Practitioners could facilitate the involvement of family members into women's care and birth according to each woman's desires and cultural traditions. The culture of the birth setting could support the choices of women during their birth experience, provide an environment in which the dynamic processes of women during childbirth are encouraged, and, in so doing, contribute to the improvement of maternal and infant health.

Society's conceptualization of childbirth can have an affect on birthing norms, the culture of the birth setting, the care available to women, and women's ability to birth. Yet, changes in childbirth policies and public support are required to discover the benefits of birth in a woman's environment and to further develop services that are women-centered and family-oriented. Home birth midwives have discovered how environments that support women's birthing process contribute to the positions women assume during labor and birth, and improved maternal and infant birth outcomes. Future health care practices should provide women with the freedom of movement, the privacy, and the space required to follow the urges of their own bodies unencumbered by controlling factors. In so doing, the knowledge regarding natural childbirth could be expanded and the potential of women during childbirth expressed.

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OBSTETRICAL DEFINITIONS

Active phase or active labor: Composed of first, second, and third stages of labor.

Apgar scores: A system of scoring an infant's condition one and five minutes after the birth. The heart rate, respiration, muscle tone, color, and response to stimuli are scored 0, 1, or 2. The maximum score for a normal infant is 10 (Thomas, 1973).

Birth plan: Goals produced by care givers and/or women and their families to accomplish a birth. Routine care.

Blood loss/Hemorrhage. Internal or external discharge of blood during or after the third stage of labor, and measured in cc's. An estimated blood loss greater than 500cc considered a hemorrhage.

Cervical dilatation: Opening of the mouth of the womb or uterus, may begin before labor, but usually opens from five centimeters to complete dilatation within the first stage or active phase of labor.

First stage: Regular contractions usually five minutes apart with sufficient frequency and intensity to dilate the cervix from five centimeters to ten centimeters or the required amplitude to allow the infant to begin its descend into the vagina.

Term: The number of full term infants a woman has birthed.

Third stage: From the birth of the infant to the birth of the placenta including immediate maternal blood loss or hemorrhage.

Presentation: The manner of the infant presenting during labor and birth.

Pre labor or latent phase: From the onset of one or many of the early signs of labor as: diarrhea, bloody show, flushing, restlessness or sleepiness, nausea or vomiting, mild irregular contractions, increase in vaginal secretions or rupture of bag of water without active labor, heightened perceptions, and increase in emotional sensitivity. It might also be regular contractions that are not yet producing dilatation of the cervix.

Repair: Refers to the act of suturing the perineal tissue.

Routine care: Procedures which are routinely administered in form of advice or ways

of caring which can either be part of an institution's culture, a practitioner's beliefs, a woman's culture, or personal knowledge, which may be based on scientific fact, training, cultural rituals, superstitions, or experience.

Second stage: The pushing stage, from complete dilatation of the cervix to the birth of the infant.

Vertex: Refers to the infant in a head presentation.

Water birth: A birth in which the infant is born into water.

Appendix A
Birthing Kit

SANTA BARBARA MIDWIFERY

I. Preparing for your home birth

1. Gather, purchase and launder as necessary all the items on the list at least 3 weeks before your due date and store in one place away from children:

3 oz. bulb syringe (soft plastic)

1-2 dozen under pads (also called "Chux" or incontinent pads) or towels (you may use either pads or towels)

thermometer for mother and baby

sanitary pads (large) and belt (at least one large box)

alcohol & cotton (for baby's cord)

2 boxes of gauze 4" x 4"s (2 dozen)

enema (single use or rubber bag)

plastic sheet or shower curtain to cover bed before the birth

squeeze bottle for cleansing the perineum in days after birth

one baby bottle, nipple & Karo or sugar (small amount)

plastic garbage bags, stack of newspapers

good, flexible light and extension cord

flashlight with good batteries

nursing bra and breast cream or lanolin

2 sets of bed linen

3 - 4 washcloths

6 receiving blankets or equivalent

Appendix B
Midwife's Birth Kit

EQUIPMENT AND SKILLS FOR HOMEBIRTH

Equipment for Homebirth

Every nurse-midwife who does homebirths will have her own opinions and preferences as to what equipment she brings to a birth, with some of those supplies being what she considers the bare essentials and the rest being extras that are specific to that midwife's own particular way of practicing, influenced by her knowledge and experiences, the type of practice (rural or urban) and kind of clientele served. Below is a list of recommendations regarding equipment.

A. CNM Equipment

Essentials	Rationale/Purpose
1) BP cuff, stethoscope	Mother's BP, auscultation, mother, baby
2) Fetoscope/Doppler	Fetal heart tones, newborn exam
3) Pediatric stethoscope	
4) Sterile gloves	Vaginal exams, birthing, suturing
4) Sterile instruments	
Scissors (2 pairs)	Cutting cord, cutting epis, suturing
Cord clamp	Clamping cord, delivery placenta
2 Large clamps (Kelly or Oschner)	
Amni hook, sterile	Amniotomy
Needle holder	Suturing
Ring forceps	Removing trailing membranes, visualizing the cervix
5) Sterile 4 x 4's	Cleaning, visualizing, aid in suturing (gauze curettage rarely)
6) Blood Collecting Equipment: Needle, tourniquet, tubes, vacutainer	For obtaining necessary specimens
7) IV: D5RL/D5W	Capability of starting IV to stabilize blood loss and/or control hemorrhage
8) Oxygen, tubing, mask (neo and adult)	To administer to mother or baby for fetal distress
9) (a) Bulb syringe	(a) suctioning, routine
(b) DeLee suction trap	(b) suctioning deep-meconium
10) Laryngoscope	Visualizing cords for meconium
11) Baby ambu and ET tubes size 0 and 1.	Resuscitation of newborn
12) Pitocin and Methergine and syringes	Control of bleeding/prevention of hemorrhage
13) Suture/local anesthetic	Episiotomy and/or lac repair
14) Baby scale	Weigh infant

Appendix C

Second Stage, Perineal, and Third Stage Care Practices

Second Stage, Perineal, and Third Stage Care Practices

Second stage. Women were able to assume a great variety of positions during second stage, they moved freely and made vocalizations. Women were motivated to facilitate their birth progress by assuming positions that increased the intensity of their labor and their comfort level. Women were able to find and follow their own pushing urges and were encouraged but not directed to push. Specific directions to help women push or changes in positions were seldom initiated by the midwife, and only encouraged to resolve dysfunctional second stage, and to increase comfort. Interventions during second stages included maternal position changes to vertical postures, lateral, or hands and knees; stimulation of pushing urge by providing rectal pressure through a vaginal exam; nipple stimulation; or pushing instructions.

Perineal care. The perineal integrity was protected according to a flexible birth plan and home birth midwifery care. Perineal stretching was associated to other muscles bundles, vocalizations, and to the birthing position. Their combined effect were taken into consideration along with the descent of the infant and perineal tissue expansion. The observation of the woman's position and movements led the midwife to discern which technique best enhanced the dilatation of the perineum. The care included: hot compresses, oiling, massaging the perineal area, gentle support, light efflurage, the birthing woman's own support, massage of adjacent muscle bundles, encouraging a change of position to a more comfortable and effective one, or refraining from interfering with the process.

Birth. Women were able to assume any position they desired and were free to move about and make vocalizations. The practitioner accommodated to the woman and was able to deliver the infant in a variety of birthing positions or facilitated the partner or the woman to deliver the infant. Shoulder dystocia were resolved with maternal position change to hand and knees or vertical position first before other procedures were initiated. Infant heart tone deceleration were resolved with maternal position change before other

forms of interventions were instituted.

Third stage. Vertical positions were not frequently used during third stage. The angle of the woman's head was routinely lowered after the delivery in order to avoid post partum hemorrhages. Vertical positions as squatting were used to intervene only if the placenta was not delivering within the first 20 minutes after the birth.

Appendix D
Labor Progress Form

Appendix E
Birth Summary Form

Baby's Name _____ Date _____ Time _____

Mother's Name _____ Age _____ G.P. _____ EDC _____

Igb _____ Blood Type _____ Rhogam _____ Rubella _____ LMP _____

PRENATAL COURSE: _____

MEMBRANES: S/A ROM Time _____ Total hours ROM _____ Color: Clear / Stained

Labors: Latent _____ 1st _____ 2nd _____ 3rd _____

Comments _____

Midwife Attendant _____ Assistant _____

BIRTH/TRANSPORT COMMENTS OR COMPLICATIONS:

Position at birth Mom's _____ Baby's _____

PLACENTA: Round / Irreg. Vessels _____ Insertion Central/Marginal/Velamentous

Comments _____ EBI _____

Drugs: Am/Time _____

Perineum:

ABGAR Scores

Minutes				Sex _____	☐ Dystocia	☐ Resuscitation
HR				Weight _____		☐ Tactile
Resp				Length _____	☐ Nuchal	☐ Bulb
Reflex				Chest _____		☐ Deice
Tone				Head _____	☐ Mac	☐ Intubation
Color				Eye Rx _____	☐ Transport	☐ Oxygen
Total				Vit K Rx _____	☐ CPR	

Comments _____

INITIAL NEW-BORN EXAM

Time _____ Temp _____ Resp _____ HR _____ Color _____

Cry _____ ☐ Skin ☐ Head ☐ Eyes ☐ Ears ☐ Nose ☐ Heart
☐ Lungs ☐ Abdomen/LSK ☐ Extremities/Hip ☐ Digits ☐ Pulse
☐ Back/Spine ☐ Reflexes-moro-rooting/Grasp/Suck ☐ Genitalia/Void/Mac

Comments _____

Assessment _____

Plan _____

Initials _____

1 day NB exam ☐ NI Comments _____

Assessment _____

Plan _____

Initials _____

3 day NB exam ☐ NI Comments _____

Assessment _____

Plan _____

☐ State ☐ BC filled

OB _____

Pediatrician _____

To ensure accuracy of data / to best comply to standards
 Use appropriate symbols and marks.

NEONATAL ACTIVITY

	0	1	2	3	4	5
1						
2						
3						
4						
5						
6						

NEONATAL ACTIVITY

	0	1	2	3	4	5
1						
2						
3						
4						
5						
6						

GA by Dates _____ GA by Exam _____

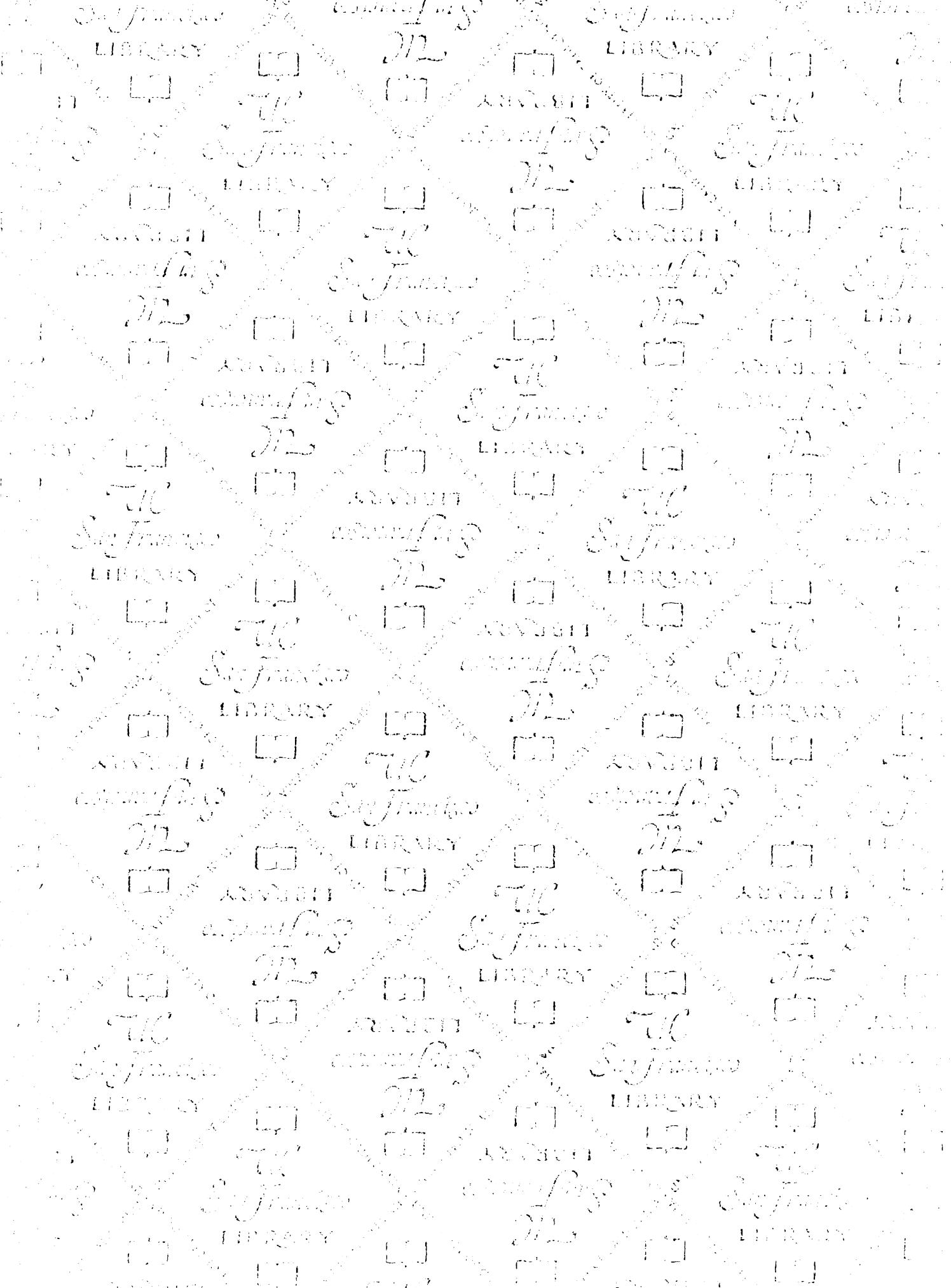
☐ SGA ☐ LGA ☐ AGA

Appendix F
Practice Philosophy

Practice Care Philosophy

Ecofeminism played an important role in the development of the philosophical bases for Santa Barbara Midwifery. The process of participation, observation, and introspection guided the formulation of the care. Underlying assumptions were developed from an inductive process in which the midwife participant/investigator used journal writing after every birth in order to better comprehend her experiences. In keeping with the ecofeminist frame work the word "patient" was not used; "women" or "client" were used instead. The philosophy of the practice was guided by three principles:

1. Birth is a sacred event, a unique natural process, universal in character.
2. Women have the right to chose where to birth, and are able to take responsibility for their choices. Women can engage in their own care, and responsibility can be shared between birthing parents and practitioner.
3. A midwife, by enhancing the birthing process instead of controlling it, has the opportunity to nurture an environment in which self empowerment is possible.



For reference

Not to be taken
from the room.

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