UNIVERSITY OF CALIFORNIA
Los Angeles

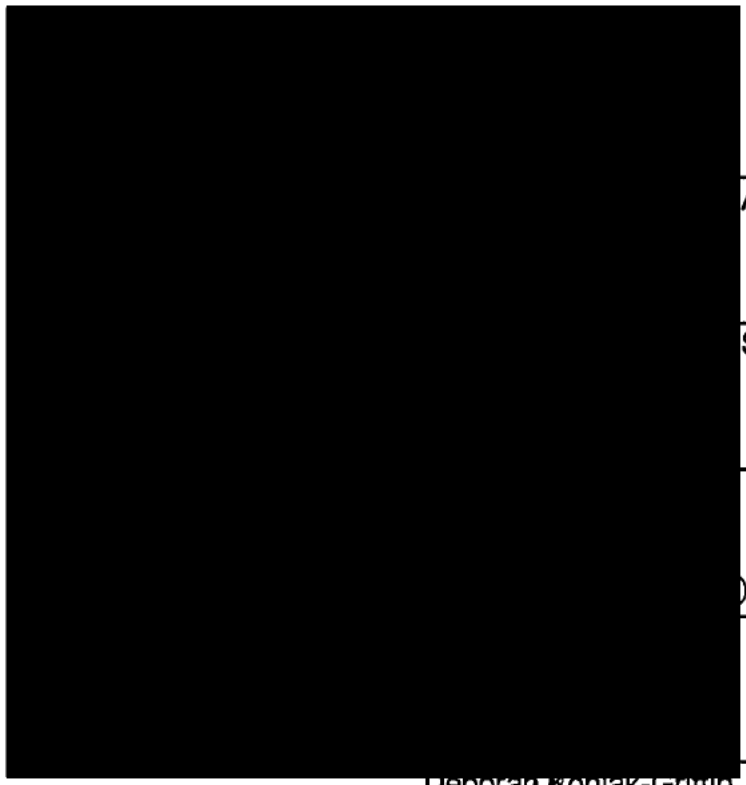
Evaluation of an Alternative Prenatal Care Visit Schedule for Low-Risk Pregnant Women

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of Nursing Science

by
Deborah Sue Walker

1994

The dissertation of Deborah Sue Walker is approved.



Adeline Nyamathi

Sharon J. Reeder

Roy M. Pitkin

B.J. Snell

Deborah Kohlak-Griffin, Committee Chair

University of California, Los Angeles
1994

Dedication

This dissertation is dedicated to my parents who have always provided love and support throughout my academic and professional career and to the women, families, certified nurse-midwives and staff at the UCI Birthing Center without whom this study would not have been possible.

Table of Contents

Table of Contents continued

Table of Contents continued

List of Figures and Tables

Figures

Tables

List of Figures and Tables continued

ACKNOWLEDGEMENTS

It has been my honor to work with many esteemed colleagues during doctoral study and throughout the dissertation process. Dr. Deborah Koniak-Griffin has been especially generous with not only her time but her encouragement, support and guidance from inception to completion of the dissertation. Invaluable contributions have been made by the members of the dissertation committee, Dr. Sharon Reeder, Dr. B. J. Snell, Dr. Roy Pitkin and Dr. Adey Nyamathi. Appreciation is extended to the UCI Birthing Center certified nurse-midwife faculty and staff for their assistance, contributions, and participation in this work. Special thanks go to Ms. Janet Otto for her diligent assistance in data collection, tireless hours spent in chart retrieval and exceptional organizational skills.

VITA

April 15, 19[redacted]	Born, Chillicothe, Ohio
1978	ADN, Nursing San Joaquin Delta College Stockton, CA
1978-1979	Primary Care Nurse Scripps Memorial Hospital La Jolla, CA
1979-1981	Staff Nurse Community Hospital Santa Rosa, CA
1981	BSN, Nursing Family Nurse Practitioner Sonoma State University Cotati, CA
1981-1983	Family Nurse Practitioner Sonoma Cty. Indian Health Santa Rosa, CA
1983-1988	OB/GYN Nurse Practitioner Kaiser Permanente Honolulu, HI
1987-1988	Volunteer Clinical Faculty Graduate School of Nursing University of Hawaii Honolulu, HI
1989	MS, Nursing Certified-Nurse Midwife University of Minnesota Minneapolis, Minnesota

1989-1991	Certified Nurse-Midwife Kaiser Permanente Bellflower, CA
1991-1994	Assistant Clinical Professor Certified Nurse-Midwife Department of OB/GYN College of Medicine UC Irvine Birthing Center Anaheim, CA
1994-Present	Assistant Professor Coordinator, Nurse-Midwifery Education Program University of Missouri, School of Nursing Columbia, MO

PUBLICATIONS AND PRESENTATIONS

Koniak-Griffin, D., Walker, D.S. & De Travarsay, J. (In Press) Prenatal predictors of depressive symptoms in pregnant adolescents. Journal of Perinatology.

Garite, T., Snell, B.J., Walker, D.L., Darrow, V. & Walker, D.S. (In Press). A free-standing birthing center: Report on the development and experience within a university medical center. Obstetrics and Gynecology.

Walker, D.S. (1994). [Review of Toward Improving the Outcome of Pregnancy: The 90s and Beyond]. Journal of Nurse-Midwifery, 39(5):338-339.

Walker, D.S. (1993). Shalala calls for changes to state regulations. Quickening, 24(3): 24.

Walsh, L.V., Schorn, M. & Walker, D.S. (1993). Nurse-Midwifery Research, 1990-1992-An Annotated Bibliography. Washington DC: ACNM, DOR.

Walker, D.S. (1993). [Review of Myself, My Baby, Health Diary]. Journal of Nurse-Midwifery, 38(6):372-373.

Walker, D.S. (1994, July) Risk assessment in pregnancy-Evaluation of an alternative prenatal visit schedule for low-risk women. Podium presentation at the 19th National Primary Care Nurse Practitioner Symposium, July 14-17, Keystone, Colorado.

Walker, D.S. (1994, June) Prenatal care for low-risk women: An alternative approach. Podium presentation at the American Academy of Nurse Practitioners 1994 National Conference for Nurse Practitioners, June 9-12, Washington DC.

Walker, D.S. (1994, April) Evaluation of an alternative prenatal care visit schedule for low-risk pregnant women. Poster presentation at Western Institute of Nursing and the Western Society for Research in Nursing Conference held April 28-30, Phoenix, AZ.

Walker, D.S. (1994, January) Evaluation of an alternative prenatal care visit schedule for low-risk pregnant women. Podium presentation at the 3rd Mead Johnson Perinatal Nursing Research Forum, Jan. 27-30, Santa Fe, NM.

Walker, D.S. (1993, November) Evaluation of an alternative prenatal care visit schedule for low-risk pregnant women. Poster presentation at the 32nd Biennial Convention of Sigma Theta Tau International Honor Society for Nursing, Indianapolis, IN.

Walker, D.S. (1993, October). Timing and frequency of prenatal care: An alternative approach. Paper presented at a national conference for advanced practice clinicians and nurses, "Caring for Women Throughout the Reproductive Cycle", San Diego, CA.

ABSTRACT OF THE DISSERTATION

Evaluation of an Alternative Prenatal Care Visit Schedule
for
Low-Risk Pregnant Women

by

Deborah Sue Walker
Doctor of Nursing Science
University of California, Los Angeles, 1994
Professor, Deborah Koniak-Griffin, Chair

While the current prenatal visit schedule is widely accepted as providing the highest quality prenatal care and followed by health care practitioners in this country and abroad, it is not based on sound scientific evidence. The frequency and timing of visits which provide the critical threshold to make a difference in outcomes, especially in women who are healthy and considered to be at low-risk for pregnancy complications, is not clear.

Women attending prenatal care at a free-standing birthing center (N=81) staffed by certified nurse-midwives participated in this prospective, randomized study designed to evaluate the effects of an alternative prenatal care visit schedule for low-risk pregnant women. Selected perinatal outcomes, maternal satisfaction, anxiety and self-care as a concept and its relationship to the dependent variables and alternative prenatal visit schedule were examined. The content of prenatal care was the same for both study groups.

Women in the alternative group attended a mean of 7.65 prenatal visits with women in the control group attending a mean of 10.84 prenatal visits. No statistically significant difference ($p<0.01$) was found on selected perinatal outcomes, satisfaction with prenatal care, or anxiety. Two satisfaction with prenatal care subscales approached significance, satisfaction with provider ($F=5.74$, $p=0.02$) and satisfaction with the prenatal care system ($F=2.01$, $p=0.04$), with women in the alternative group reporting higher levels of satisfaction. Women with greater self-care capabilities demonstrated a statistically significant difference in state anxiety ($r=-0.54$, $p=0.001$).

Findings indicate the need for further investigation of appropriate, cost-effective, satisfying, and efficient means of delivering prenatal care to low-risk women. Further implications involve the need for assessing the alternative visit schedule with a variety of providers and in larger more diverse populations and settings.

Chapter 1

Introduction

Prenatal care positively influences perinatal outcomes (Wallace, 1988; Thompson et al., 1990; National Center for Health Statistics, 1988). While the mechanism remains unclear, the perinatal outcomes most effected by prenatal care are preterm birth and low-birthweight infants (Klein & Goldberg, 1990). Preterm birth and low birthweight are significant contributors to neonatal, perinatal and infant mortality in the United States (McCormick, 1985). In fact, preterm birth bears the greatest burden for loss of life before age 65, is a financial burden in terms of neonatal intensive care and care for handicapping conditions, and presents a continued burden to society (Klein & Goldenberg, 1990).

For many years prenatal care has been considered an excellent example of preventive medicine. Regular and early attendance in prenatal care has been strongly recommended by the government and the medical profession (Institute of Medicine, 1985; American College of OB/GYN, 1989). Studies convincingly support these recommendations for women with complicated or abnormal pregnancies (Enkin & Chalmers, 1982). The evidence supporting the benefits to the majority of women with uncomplicated, low-risk pregnancies has not been as conclusive.

Organized prenatal care is a 20th century development. Since its

inception, it has been viewed as essential to the promotion of healthy outcomes of pregnancy for all women and infants. To date, many of the accepted prenatal care practices, including the recommended visit schedule, have not been scientifically validated as effective in reducing maternal and/or infant morbidity and mortality. However, despite the lack of evidence the health professionals' belief and trust in the overall value of prenatal care is strong.

One reason cited for the lack of organized prenatal care until this century is that there was little that caregivers could legitimately claim to be able to do in the way of diagnosing, monitoring or intervening in pregnancy. Today modern technological advances have given health care professionals both the tools and an increased responsibility for overseeing pregnancies. A balance between science and technology must be maintained with the psychosocial, cultural and personal needs for women and families. Individualized care should be a goal with health care providers being sensitive to factors that could influence the outcome of pregnancy. Women who are at low risk for pregnancy complications may not need the same high intervention care as that given to women at higher risk.

There is general consensus that prenatal care is beneficial. A statistically significant association between the number of prenatal visits

and perinatal outcomes has been demonstrated (Lindmark, 1992). The belief that "more is better" has been applied to prenatal care from its earliest beginnings. This strategy strives to make the best of the worst possible outcome, regardless of the individual probability that a poor outcome will occur. Support for this philosophy is found in public and professional opinion, but gives little credit for the appropriate handling of normality without addition of unnecessary risk or strain (Lindmark, 1992). The prevailing school of thought has been to conclude that it is best to regard every pregnancy as a potentially high risk pregnancy. A central theme for of perinatal care has been that a normal pregnancy, labor and delivery is only normal in retrospect; that all pregnancies are high risk until proven otherwise. There is a very real risk that increased medical attention in normal cases may lead to unnecessary use of interventions and additional risk from the procedure itself as well as to adverse psychological consequences (Lindmark, 1992). In other words, perinatal care in and of itself has the ability to turn a low-risk pregnancy into a high-risk pregnancy by medical treatment alone in some cases.

There is no doubt that sophisticated medical and technological developments have benefited many individuals in perinatal care as well as other areas of health care. However, even with these new methods little change has been seen in the overall health of the general population (Hill

& Smith, 1990). The United States, in spite of the ready availability of sophisticated technology for almost everyone, continues to have an infant mortality rate worse than 21 other developed countries (Wegman, 1993). The message seems to be that it takes more than sophisticated, highly tech interventions to improve the health of women and children.

In the low-risk pregnant woman, prenatal care is primarily concerned with promoting the health and well-being of the pregnant woman, the fetus, the infant and the family up to 1 year after birth. The three main objectives of prenatal care are: 1) early and continuous risk assessment, 2) health promotion, and 3) medical and psychosocial interventions and follow-up (Klerman, 1990). The specific content and timing of prenatal visits, contacts, and education should vary depending on the risk status of the pregnant woman and her fetus (Klerman, 1990), however, most prenatal care is not individualized. Currently prenatal care across the country is based on the expert recommendation of the American College of Obstetricians and Gynecologists (ACOG) which states "Generally a woman with an uncomplicated pregnancy should be examined approximately every 4 weeks for the first 28 weeks of pregnancy, every 2-3 weeks until 36 weeks of gestation, and weekly thereafter, although flexibility is desirable" (ACOG, 1989). Flexibility in today's practice seems to relate more to increasing the number of visits, rather than decreasing them.

It is imperative that a prenatal care visit schedule for women at low obstetrical risk be developed which can meet the specific needs of these women. A scientifically based abbreviated visit schedule for low-risk pregnant women would have many advantages from the point of view of the health care system and the individual women and their families. There is an economic need to make the best possible use of available resources. If less prenatal care visits to the provider were scheduled, low risk pregnant women would need to take less time from work for prenatal visits and spend less money on babysitters and transportation. The health care provider would be available to see more women, thereby increasing access to prenatal care. Additionally, the health care system in general would benefit by the decreased expenditure on unnecessary interventions.

Statement of the Problem

In 1986 an expert panel was convened by the Department of Health and Human Services' Low Birthweight Prevention Work Group. This Panel consisted of 19 national experts from many disciplines who were instructed to examine the content of prenatal care and its effectiveness in promoting the health and well-being of women and their infants. These experts came from such diverse areas as consumer affairs, economics, epidemiology, family practice, law, neonatology, nurse-midwifery, obstetrics, pediatrics, psychiatry, public health and social work.

The Panel was charged with assessing the content of prenatal care scientifically and systematically. In addition, they were to report on effective and efficient approaches for enhancing maternal, infant and family outcomes. The Panel developed a system for delivery of prenatal care based on the recommended prenatal care content. Review of the literature in this area by Panel members revealed that the frequency and timing of the sequence of prenatal care in the current health care system is so lacking in a sound scientific basis that the recommendations could only be based on the expert clinical judgment of the members (Thompson, 1990). The recommended visit schedule evolved from the scientific evidence and expert clinical judgment regarding effectiveness for identifying and modifying risk and the success of medical and psychosocial interventions (USDHHS, 1989). Panel members had no original research on which to base their recommendations, therefore the proposed visit schedule was based on literature indicating when specific diagnostic tests should be optimally performed and when, in their judgement, behavioral modification was most likely to have the greatest impact (Thompson, 1990).

The Panel believed that prenatal care visits themselves could be a stressor for some pregnant women. Therefore, decreasing the number of visits was recommended. The reduction in the number of visits was based on the assumption that high-quality care would be offered. Included in this

assumption was that the prenatal care providers would be easily accessible to the woman and her family should they have questions or problems and that clients would continue to be screened for changing risk status throughout their pregnancies.

This alternative model for prenatal care delivery developed by the Panel consists of a schedule of 10 proposed prenatal visits for women experiencing their first pregnancy and 8 visits for women with subsequent pregnancies, not including the preconceptional visit, and of course dependent on at what gestational age the birth occurs. Currently, the recommended American College of Obstetricians and Gynecologists' (ACOG, 1989) visit schedule includes 14, and perhaps more, prenatal visits for a full term pregnancy.

The current prenatal visit schedule is not supported by scientific data. Research studies are needed to better define the appropriate system of prenatal care for the majority of pregnant women who are at low obstetrical risk and their families.

Purpose of the Study

The purpose of this study is to determine the effects of an alternative prenatal care visit schedule on selected perinatal outcomes, anxiety and maternal satisfaction with prenatal care. A model of prenatal care delivery adapted from the recommendations presented by the Expert Panel will be

tested in this research. Low-risk women will be randomly assigned to an alternative prenatal visit schedule group and a traditional prenatal visit schedule group. In addition, the impact of prenatal care on self-care practices will be considered in relation to the dependent variables and selected demographic variables.

Significance of the Study to Nursing

Providing accessible, appropriate and affordable prenatal care is a national problem which demands scientific attention. Research which focuses on the appropriate timing and frequency of prenatal care visits for low-risk women is virtually nonexistent. Enlarging the prenatal care knowledge base could provide a basis for the development of a conceptual model for prenatal care delivery for low risk pregnant women. Additionally, finding answers to this problem might help to predict which women will change risk status during pregnancy and for what reasons.

Nurses were instrumental in developing prenatal care in this country. Prenatal care has been provided by community health nurses, nurse practitioners and nurse-midwives for many years. Nurses also have a long history of being advocates for women and children and are well prepared to address this issue.

Studying prenatal care is in essence studying the woman's response to a healthy life event, pregnancy. In recent years the American Nurses'

Association (1980) defined nursing as "the diagnosis and treatment of human responses to actual or potential health problems". This definition considers health, rather than illness, the primary focus of nursing. The nurse's role is to support the client's adaptive coping mechanisms related to human responses to alterations in health (Steiger & Lipman, 1985). Pregnancy is one example of an alteration in health and prenatal care is provided to support the client's adaption to this alteration. Therefore, research related to pregnancy and prenatal care is congruent with nursing's definition of itself.

Clinically this study may help guide nursing practice. The data obtained from this study may potentially lead to a change in the way prenatal care is delivered.

The short term significance of this study will be to help to increase the knowledge base regarding the timing and frequency of prenatal care delivery. The long term significance of this study will be to aid health care professionals and policy makers in increasing the accessibility of prenatal care to all women and to establish policies which will make the best use of available resources for prenatal care delivery.

In Chapter 2 the theoretical framework guiding the study will be described. The literature review is found in Chapter 3, and Chapter 4 will examine the methodologic issue involved in this study. In Chapter 5 the

data analysis will be presented and Chapter 6 will comprise a discussion of the findings of the study.

Chapter 2

Theoretical Framework

The theoretical framework for this study is derived from self-care theory. Self-care is an approach to health care, rather than a specific intervention (Steiger and Lipson, 1985). It is a philosophy that is woven throughout all aspects of care that nurses provide to their clients. It assists nurses in focusing on the ways in which clients can care for themselves in illness and in health. Where medicine frequently attends to the characteristics that make all humans alike (eg, normal parameters of anatomy and physiology), nursing addresses the characteristics of people that make each one unique (eg, coping styles, communication patterns, and learning styles) (Gantz, 1990). The work of nursing within the context of self-care is to identify and assess self-care needs and abilities, to design nursing interventions that address the needs, to evaluate the effectiveness of these interventions with clients, and to understand how these needs determine nursing actions (Gantz, 1990).

The components of self-care can also be used in conjunction with professional care. Self-care is not meant to replace or exclude traditional medical approaches. It is consistent with quality care in that it utilizes the health care system without being solely dependent on it. Ethical nursing care includes a recognition of those instances when individuals need

assistance in identifying their self-care limitations and needs for professional assistance (Hill & Smith, 1990).

In the theoretical framework of this study self-care is viewed as a mediating variable. The alternative prenatal care visit schedule, the intervention, is designed to enhance the individual's ability to exercise self-care. When an individual is seen less frequently for prenatal care, more responsibility is placed on self-care skills. Therefore, the dependent variables, perinatal outcomes, anxiety, and satisfaction are mediated by the ability of the individual to exercise these self-care skills.

The theoretical model guiding this study is diagrammed below. Self-care as a mediating variable and its relationship to the dependent variables and the alternative prenatal care visit schedule (APCVSG) comprise the model. The specific aims and hypotheses of the study follow the diagram of the model below.

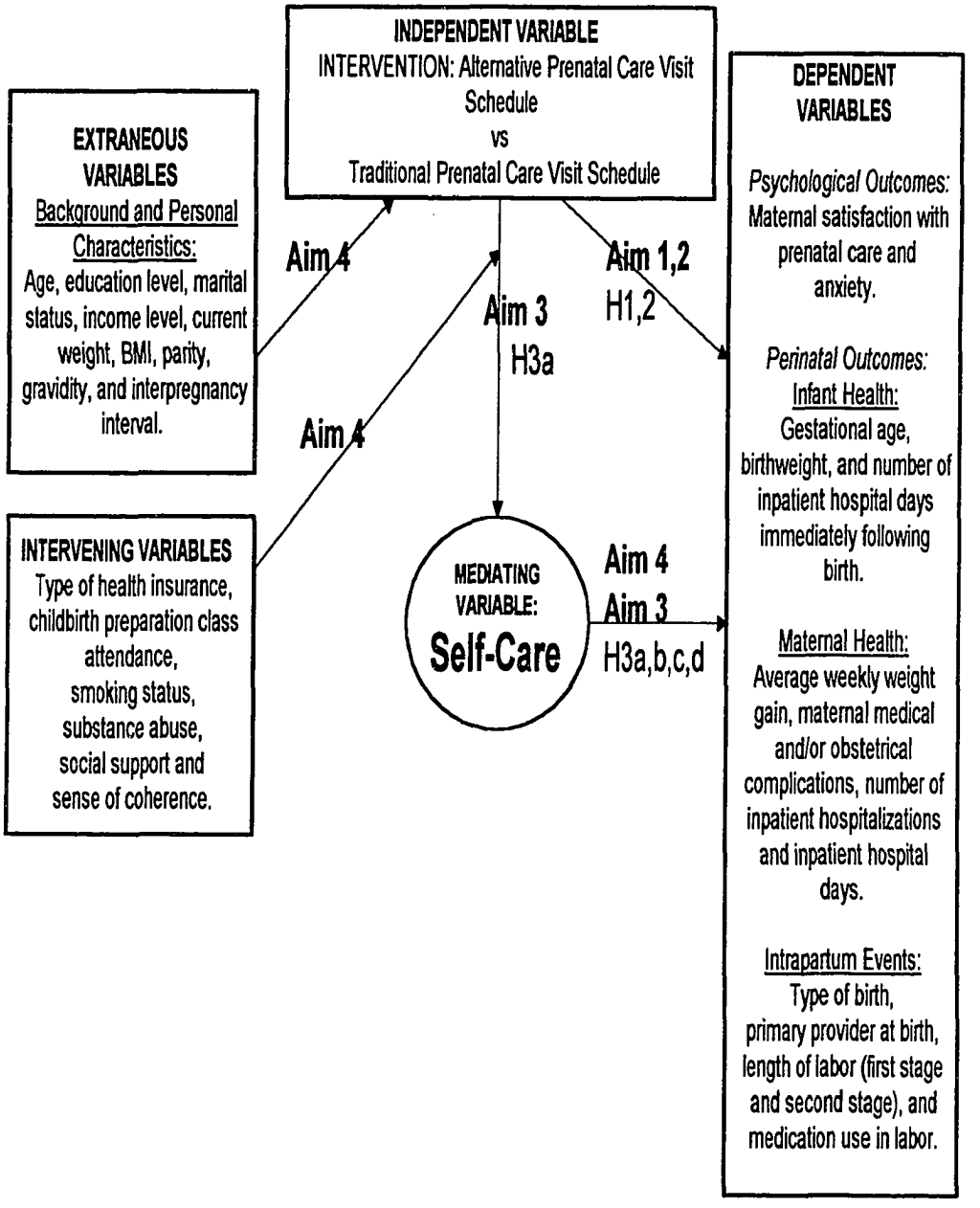


Figure 1 Theoretical Model

Aims and Hypotheses of the Study

Aim 1	To determine the effects of an alternative prenatal care visit schedule on selected perinatal health outcomes. The three domains of perinatal health outcomes to be measured are: Infant Health: Gestational age at delivery, birthweight, and number of inpatient hospital (NICU and newborn nursery) days immediately following birth; Maternal Health: Average weekly weight gain, number of maternal medical and/or obstetric complications, and number of inpatient hospitalizations and hospital days during pregnancy; Intrapartum Events: Type of birth, primary provider at birth, length of labor, and medication use in labor.
Hypothesis 1:	There will be a significant difference in perinatal outcomes between low-risk pregnant women in the alternative prenatal care visit schedule group vs those in the traditional prenatal care visit schedule group.
Aim 2	To determine the effects of an alternative prenatal care visit schedule on anxiety and maternal satisfaction with prenatal care.
Hypothesis 2:	There will be a significant difference in anxiety and maternal satisfaction between women in the alternative prenatal care visit schedule group vs those in the traditional prenatal care visit schedule group.
Aim 3	To test the relationship between the alternative prenatal care visit schedule and perinatal outcomes and maternal satisfaction with care as mediated by self-care.
Hypothesis 3A:	Women in the alternative prenatal care visit schedule group will demonstrate greater self-care capabilities as compared to those in the traditional prenatal care visit schedule group.
Hypothesis 3B:	Women with greater self-care capabilities will have significantly better perinatal outcomes as compared to

those with less self-care capabilities.

Hypothesis 3C: Women with greater self-care capabilities will demonstrate greater satisfaction with prenatal care as compared to those with less self-care capabilities.

Hypothesis 3D: Women with greater self-care capabilities will demonstrate less anxiety as compared to those with less self-care capabilities.

Aim 4 To examine the relationship between extraneous demographic and personal background variables, selected intervening variables, the independent variable, self-care, and perinatal outcomes. anxiety and maternal satisfaction with prenatal care.

Aim 5 To determine if there is a difference between women in the alternative prenatal care visit schedule group and women in the traditional prenatal care visit schedule group as determined by number of prenatal visits attended, number of unscheduled appointments, number of evaluation room visits, number of emergency room visits, number of "no show" appointments, number of telephone calls, and number of patient initiated transfers of care.

Aim 6 To conduct a cost-benefit analysis of the alternative prenatal care group and the comparison group in order to evaluate whether the benefits of attending fewer prenatal visits outweigh the costs.

Aim 4, 5 and 6 do not have hypotheses associated with them due to their exploratory nature. Further discussion on the evaluation of Aims 4, 5 and 6 is found in the statistical analysis section of Chapter 4.

Self-Care

Self-care is present in most cultures and health care systems. It is a

philosophy of care that has waxed and waned in popularity throughout time. Before there were specialized health care providers, people used self-assessment, self-diagnosis and self-treatment both to prevent and to solve health problems. With the advent of organized health care and the development of a scientific basis for health care practice, a higher level of responsibility was placed on the health care provider to maintain people's health and less responsibility assumed by the individual. In the 1960's, self-care philosophy regained popularity. Individuals again expressed a desire to assume control over their health and began to pay more attention to learning and practicing basic self-care skills (Hill & Smith, 1990). The resurgence of self-care continues today and is evident in the emphasis placed on physical fitness, weight control and decreased dietary fat intake, to name a few areas.

Health care systems have both professional and self-care components (Steiger & Lipson, 1985). Self-care and professional care are differentiated based on the characteristics of the caregiver, such as specialized training, knowledge, responsibility for care, and expectation of payment for services. It is estimated that 75% or more of health care is self-care (Williamson and Danaher, 1978) and includes activities that substitute for professional intervention and those that supplement professional care. Williamson and Danaher (1978) propose that self-care is not only the first level of health

care but the largest part of the health care system. Simonton (1978) asserts that if people mobilized their resources and actively participated in maintaining their own health, life expectancies would improve as would the quality of life. Economic issues are also relevant to self-care, particularly in light of today's escalating health care costs.

Self-Care Philosophy

Self-care is conceptually defined as those activities initiated or performed by an individual, family, or community to achieve, maintain, or promote maximum health (Steiger & Lipson, 1985). Self-care activities are engaged in by individuals in order to maximize their health potential. The basic premise of this approach is that an individual's health status is determined primarily by personal behavior and circumstances over which the individual has some control (Williams, 1990). These activities include personal or environmental hygiene, nutrition, preventive services, medications and medical treatments which are intended to heal or cure (Steiger & Lipson, 1985).

The major components of self-care are: 1) health promotion; 2) health maintenance; 3) disease prevention; 4) self diagnosis, self-medication and self-treatment; and 5) patient participation in health care services (Steiger & Lipson, 1985). Most medical experts feel that prenatal care falls within the realm of disease prevention. Disease prevention comprises "specific

behaviors or activities which are intended to prevent either the experience or the spread of specific disease" (Hill & Smith, 1990). Such activities consist of skills and practices aimed at disease prevention when a threat such as a family history of diabetes, cancer, or hypertension, for example, exist.

Health maintenance, on the other hand, is defined as "any behavior or activity which results either in the prolongation of life expectancy or in an increase in the quality of life, whether or not this was originally intended as a main objective" (Hill & Smith, 1990). In order for prenatal care to fit within the disease prevention component, pregnancy would be viewed as a predisposing factor to disease. An alternative philosophy is that pregnancy is a healthy life event, not a disease nor a predisposition toward disease, and therefore prenatal care is conceptualized as falling within the realm of health maintenance, not disease prevention. Health maintenance prenatal care activities strive to enhance the quality of life of mother and baby while also prolonging their life expectancies. Many health maintenance activities are stressed in prenatal care delivery, ie sleeping 7-8 hours per night, eating three balanced meals per day at regular times, maintaining moderate weight, using no tobacco, alcohol, or drugs, exercising two or three times per week, practicing daily relaxation, wearing seat belts, etc. (Hill & Smith, 1990). Therefore, in this dissertation prenatal care will be

viewed as a health maintenance activity within the self-care concept.

There are a number of explicit and implicit assumptions within the self-care conceptual framework. Explicit assumptions postulate that people are both capable and willing to perform self-care actions that are necessary for health and well-being according to developmental state. Personal success in performing self-care activities is affected by education, culture and available resources. The inference then is that self-care is a deliberate and systematic group of actions which are learned and reinforced through social interaction and communication (Rourke, 1991). Implicit assumptions within the framework are a valuing of individual self-reliance and personal responsibility.

Self-Care Theorists

The promotion of healthy lifestyles is a foundation of nursing practice. Nurses throughout history have taught health enhancing self-care practices to clients (Hill & Smith, 1990). Virginia Henderson (1964) defined the practice of nursing as assisting clients, sick or well, in the performance of those activities that contribute to health, which would otherwise be performed unaided if the client had the necessary strength, will and knowledge. The American Nurses' Association (1980) defines nursing as "the diagnosis and treatment of human responses to actual or potential health problems." The commonality in both these definitions is the

emphasis on health rather than illness as the primary focus of nursing.

Self-care theory has been applied to clinical practice by nurses, physicians, sociologists, anthropologists and others. Of the nursing theorists, Dorothea Orem, RN is best known for her theoretical model which applies self-care theory to nursing practice. Orem's major contribution to nursing centers on applying self-care theory to help clients learn to help themselves through the use of "deliberate and learned behaviors that purposely regulate human structural integrity, functioning, and human development" (Hill & Smith, 1990). Orem defines self-care as "the production of actions directed to self or to the environment in order to regulate one's functioning in the interests of one's life, integrated functioning and well-being" (Orem, 1985). Self-care is perceived by Orem as a deliberate action that is goal oriented and includes three types of self-care: universal (maintenance of air, water, food, etc.), developmental (related to life events such as birth and death), and health deviation (seeking medical assistance, carrying out medical treatment, learning to live with certain conditions) (Orem, 1985).

Lowell Levin, MPH, EdD is often referred to as the "father of self-care" (Steiger & Lipson, 1985). Levin sees self-care as a process whereby laypeople function on their own behalf in health promotion, disease detection and treatment at the level of the primary health resource in the

health care system (Levin et al., 1976). Levin envisions an expansion of nonprofessional health care resources to include "nuclear and extended families, friendship networks, affinity groups, churches, mutual aid groups, libraries, groups of fellow-workers, and political groups" (Levin, 1980). He also sees the self-care movement making an impact on improving the environment and communities through building on the base of individual initiative (Levin, 1980).

Self-Care and Maternal Child Health

In maternal child health, nurses have used these components of self-care by helping clients to practice skills in preparation for childbirth, breastfeeding, parenting and to stay healthy during the pregnancy. Although the process of self-care does not decrease the need for professional intervention, "it does mean that the focus of the visits may be changed to client teaching, client reporting, and physical monitoring" (Hill & Smith, 1990).

Self-care is particularly important prenatally as the pregnant woman is required to monitor not only her own health but that of her unborn child as well. Women are asked to notice and report any signs that their child may be experiencing difficulty, such as decreased fetal movement, to her health care provider. Additional responsibility is placed upon the woman to care for the health of two people instead of just one, for some women this is

their first act of mothering.

Self-Care Agency

Self-care as a concept has been discussed earlier in the paper. The application of self-care to daily living can be measured by assessing self-care knowledge, attitudes, and behaviors. Internal and external resources are needed to exercise self-care behaviors. When following a healthy diet an individual must have the knowledge to know which foods are healthy, the desire or positive attitude to follow a healthy diet, the resources to purchase these foods, and the skills with which to prepare them.

Self-care is operationally measured in this study by evaluating self-care agency. The concept of self-care agency is a central theme in Orem's theory of self-care. Self-care agency refers to a set of human abilities for meeting self-care requisites, such as acquiring knowledge, decision-making, and taking action for change (Steiger & Lipson, 1985). The term "agent" is used in the sense of the person taking action (Orem, 1985). Therefore, the self-care agent is the provider of self-care (Orem,1980). Self-care agency is a complex structure consisting of three types of abilities, which can be hierarchically arranged according to the degree to which they are foundational to one another (Orem, 1985). At the base of the foundation are dispositions and traits consisting of basic

abilities pertaining to sensation, perception, memory and orientation. At the next level are "power components" which are a set of enabling capabilities that relate specifically to the engagement of self-care. At the top of the foundation are the abilities necessary to perform what Orem refers to as "self-care operations, " of which three have been delineated: (1) estimative operations-investigating conditions and factors in self and environment that are significant for one's self-care: (2) transitional operations-making judgements and decisions about what one can, should, and will do to meet one's self-care requisites; and (3) productive operations-performing measures to meet one's self-care requisites (Orem, 1985).

Kearney and Fleischer (1979) developed the first operational measure of self-care agency to appear in the literature based on their own conceptual analysis (Gast et al., 1989). The Exercise of Self-Care Agency (ESCA) scale is based on the construct of self-care as proposed by Orem (1980) and discussed earlier in this paper. Kearney and Fleischer (1979) identified five dimensions and four subconstructs of "exercise of self-care agency". The five dimensions which are considered to be important indicators of a person's exercise of self-care agency include: (1) an attitude of responsibility for self, (2) motivation to care for self, (3) application of knowledge to self-care, (4) the valuing of health priorities, and (5) high

self-esteem (Gast et al., 1989). The four subconstructs that contribute to a person's exercise of self-care agency are: (1) an active versus passive response to situations, (2) motivation, (3) knowledge base, and (4) sense of self-worth.

The ESCA scale was developed from these dimensions and consists of 43 items that are broadly representative of the construct; items are rated using a five-point Likert-type scale (Gast et al., 1989). Riesch and Hauck (1988) performed a factor analysis of the ESCA scale based on data from a sample of pregnant women and their labor coaches, university faculty, staff and students (n=506) and found that four factors were identified. These factors were self-concept, initiative and responsibility, knowledge and information seeking, and passivity (Riesch, 1988).

Self-care agency is thought to be a complex, multidimensional concept which may require many instruments to measure thoroughly. The ESCA primarily measures the attitudinal dimension of self-care agency.

Constitutive Definitions of Terms

Alternative Prenatal Care Visit Schedule: The independent variable in this study. A schedule of visits based on the recommendations of the USDHHS Expert Panel on Prenatal Care (1989) for women at no apparent risk. The panel's recommendations were based on research indicating when specific diagnostic tests should be optimally conducted and when behavioral modification was most likely to have the greatest impact. Women will attend approximately 8 prenatal visits for a full term pregnancy, depending on when care is begun. An example of the visit schedule is as follows: Initial visit, 15-19 weeks gestation, 24-26 weeks gestation, 32 weeks, 36 weeks, 38 weeks, 39 weeks, 40 weeks, and then weekly until the birth of the baby.

High Risk Pregnancy Status: A pregnant woman whose health is complicated by chronic illness, such as but not limited to, diabetes, hypertension, or heart disease, has a history of pregnancy complications such as more than three spontaneous pregnancy losses, a stillborn baby, or has given birth to a preterm baby. Also complications of the current pregnancy such as multiple gestation, gestational diabetes, premature labor or fetal complications such as intrauterine growth retardation or anomalies to name a few.

Low-Risk Pregnancy Status: The absence of health complications such as hypertension, multiple gestation, bleeding or chronic illnesses which would increase the likelihood for further development of medical complications during the pregnancy, labor, birth and postpartum period.

Prenatal Care: Initial and periodic evaluation of the childbearing family's status with particular attention paid to the health of the expectant mother and fetus. The basic components of prenatal care are health education and promotion, risk assessment, and health and psychosocial interventions and follow-up.

Perinatal Outcomes: The dependent or outcome variables in this study. Maternal and infant health indicators such as gestational age at birth, birthweight, and health complications will be evaluated as well as type of delivery.

Risk Assessment: An essential component of prenatal care in which the health of the pregnant woman and child are frequently monitored for sign and symptoms of developing health complications.

Self-care: A mediating variable in this study which is conceptually defined as those activities initiated or performed by an individual, family, or community to achieve, maintain, or promote maximum health (Steiger & Lipson, 1985).

Self-care agency: A term which refers to a set of human abilities for meeting self-care requisites, such as acquiring knowledge, decision-making, and taking action for change (Steiger & Lipson, 1985).

Traditional Prenatal Care Visit Schedule: A schedule of prenatal visits recommended by the American College of OB/GYN (1989) which states that "a woman with an uncomplicated pregnancy should generally be seen every 4 weeks for the first 28 weeks of pregnancy every 2-3 weeks until 36 weeks of gestation, and weekly thereafter". This is the visit schedule followed by the participants in the control group in this study.

Chapter 3

Literature Review

This chapter presents a review of the literature focusing on the main themes of the study. The purpose of this study is to evaluate the effects of an alternative prenatal care visit schedule on selected perinatal outcomes, anxiety, and maternal satisfaction with prenatal care within the context of self-care theory. The literature, therefore, will highlight studies addressing 1) the prenatal care delivery system, 2) the effect of prenatal care on perinatal outcomes, 3) the relationship between self-care and perinatal outcomes and, 4) the relationship between self-care and prenatal care.

Prenatal Care Delivery

History of Prenatal Care

Pregnancy is surrounded by myths, traditions, rituals and taboos in one form or another in almost all societies. The pregnant woman is viewed as one who requires special care. Oral traditions, which were the earliest and principle means of communication regarding pregnancy and care during the prenatal period still survive in many cultures. Pregnancy and prenatal care were not viewed as appropriate subjects for discussion among men until the 19th century. Prenatal care, as we know it today, dates back only to the early 20th century in Europe and the United States (Speert, 1980; Oakley, 1982).

Experts disagree on the reasons behind the development of modern day prenatal care. One opinion is that maternity care has gone through four periods of shifting emphasis, originally concern focused on reducing maternal mortality, second was an emphasis on the relief of pain, third an attempt to reduce infant mortality and in recent years interest on providing psychological satisfaction along with safe physical outcomes (Institute of Medicine, 1982). Other experts cite the concern about the birth of weak and deformed infants and the death of healthy infants shortly after birth as the major impetus behind the development of prenatal care and the death of women in childbirth as only a secondary concern (Thompson, Walsh & Merkatz, 1990).

Regardless of the earliest motivations of prenatal care, since early in this century it has been viewed as vital to the promotion of healthy maternal and fetal outcomes. Health professionals continue to strongly support prenatal care for all women in spite of the fact that many accepted prenatal care practices have not been validated as effective in reducing maternal and/or infant morbidity and mortality (Thompson, Walsh & Merkatz, 1990).

Since early in this century little has changed in the pattern of prenatal care. Before this time, however, the pregnant woman usually had but a single prenatal visit with a caregiver. The main purpose of that one visit was to attempt to determine the anticipated date of delivery. When next

the woman was seen by a care provider she might be acutely and severely ill.

The world's first prenatal clinic was established at Dublin Maternity Hospital in 1858 (Thompson et al., 1990). It was during this time that women with eclampsia were discovered to have elevated blood pressures, although the practice of routinely taking blood pressures during prenatal care did not become an accepted practice until 20 years later (Speert, 1980). Due to the overcrowded conditions at the Maternity Hospital, women were required to apply several months before their expected delivery. The physicians used the opportunity to take a brief history, perform a physical exam, check the urine, and create a brief record. Women with swelling, headache and protein in their urine were treated with bedrest, light nourishment and frequent purges (Thompson et al., 1990). Physicians at the hospital noted that the incidence of eclampsia was greatly reduced among women attending the clinic (Thompson et al., 1990). Thus prenatal care began with the main purpose of preventing complications due to eclampsia.

Organized prenatal care in the United States was introduced largely by social reformers such as the Women's Municipal League of Boston and community health nurses (Thompson, Walsh & Merkatz, 1990). In 1901 Boston, prenatal care began as home visits in an effort to promote healthier

infants. By 1909 nurses visited each woman registered in Boston Lying-In hospital at least once during the pregnancy and up to visits every 10 days by a nurse with instruction in self-care and provision of emotional support in some cases. This program was considered so successful that an outpatient clinic was established and women were encouraged to report as early in pregnancy as possible. This newly organized prenatal care delivery system was estimated to have reduced fetal mortality by 40% (Thompson, Walsh & Merkatz, 1990). Physicians utilizing this new system of care reported preterm birth rates of 7%, a rate largely unchanged to the present (Thompson, Walsh & Merkatz, 1990).

In 1907 Dr. Josephine Baker began an organized prenatal care delivery service. Women were offered care only after the seventh month of pregnancy and were turned away if they applied earlier. Two nurses were hired for the specific purpose of providing prenatal care and prenatal education. The pregnant women in this program had an infant mortality rate that fell from 170 to 49 per 1000 live births. However, it was also at this time that the milk stations and the mandatory pasteurization of milk was begun, which may have attributed to infant survival as well.

In 1918 the Maternity Center Association (MCA) of New York opened its doors. It was one of three newly formed centers and its mission was to oversee the establishment of centers for prenatal care for all of Manhattan.

Within the first 3 years of operation the MCA demonstrated almost a 30% reduction in neonatal deaths and a 21.5% reduction in maternal mortality (Thompson, et al., 1990). Prenatal care at MCA consisted of a physical examination by a physician, home and district clinic visits with public health nurses and an educational emphasis on preparation for delivery and care of the infant. Anne Stevens, RN, Director of MCA described the prenatal care routine as consisting of a physical examination and blood pressure recording if seen in an office setting and home visits every 2 weeks until the 7th month and then weekly. During home visits, the nurse performed the analysis of urine and auscultated the fetal heart. She inquired about danger signs and gave advice about diet, hygiene, exercise and preparation for infant care (Stevens, 1920). Stevens viewed prenatal care as being almost entirely dependent on the public health nurse. She felt that it was her job to find the woman early in pregnancy, gain the woman's confidence, and teach her why she need medical and nursing care (Thompson et al., 1990).

Dr. Ralph Lobenstine had a different view of prenatal care. He believed that physician should control the actions of public health nurses and welfare organizations even though it was those same nurses and social reformers who had developed the very pattern of prenatal care (Thompson, et al., 1990). He advised pregnant women to seek the advice of a

"competent" physician as early in pregnancy as possible. Dr. Lobenstine believed that prenatal care consisted of four components. He believed that a physical exam, the first component, as early in pregnancy as possible was an essential part of prenatal care in order to learn if abnormal conditions existed, to have time to give advice on health and dietary habits and to be able to educate women regarding pregnancy. The second component of prenatal care in his view, were home visits by a specially trained public health nurse with each woman seen twice monthly up to the 7th month, then weekly by either a nurse or doctor until delivery. The third component of prenatal care was a visit with a trained social worker, if needed, and the fourth component included hospital care of all abnormal cases. Dr. Lobenstine was one of ten physicians asked by the Children's Bureau to meet and define the standards of prenatal care (Thompson et al., 1990).

Standards today are set by the American College of Obstetricians and Gynecologists and published in the Manual of Standards in Obstetric Gynecologic Practice. This set of recommendations is intended to "assist doctors, hospitals, and nurses to render the best possible care to their patients. . . but not as a compilation of rules to be followed slavishly" (ACOG, 1989). The current recommended prenatal visit schedule consist of monthly office visits until the 7th month of pregnancy, biweekly visits

until 36 weeks and then weekly visits until birth. The visit schedule has remained relatively unchanged for the last forty years, if not longer, with the addition of ultrasounds and laboratory tests as screening tests to detect risk factors in pregnancy became more available.

Objectives of Prenatal Care Delivery

Prenatal care is the health care service most relied upon to assure positive pregnancy outcomes since early in this century (Thompson, 1990). The National Center for Health Statistics reported in 1988 that women who receive prenatal care during the first trimester have better pregnancy outcomes than women who have little or no prenatal care.

The broad objectives of prenatal care are to promote the health and well-being of the pregnant woman, the fetus, the infant and the family up to 1 year after the infant's birth. In the past, prenatal care focused on the prevention of eclampsia and other maternal correlations of toxemia. Recently prenatal care has become more concerned with the identification and management of high-risk conditions for the fetus and newborn. An overview of prenatal care identifies pregnancy as an opportunity to promote the health and well-being of the family.

Specific prenatal care objectives were developed by the Public Health Service Expert Panel on the content of prenatal care (USDHHS, 1989).

The objectives of prenatal care for the pregnant woman are

*to increase her well-being before, during, and after pregnancy and to improve her self-image and self-care;

*to reduce maternal mortality and morbidity, fetal loss, and unnecessary pregnancy interventions;

*to reduce the risks to her health prior to subsequent pregnancies and beyond childbearing years; and

*to promote the development of parenting skills.

The objectives of prenatal care for the fetus and the infant are

*to increase well-being;

*to reduce preterm birth, intrauterine growth retardation, congenital anomalies, and failure to thrive;

*to promote healthy growth and development, immunization, and health supervision;

*to reduce neurologic, developmental, and other morbidities; and

*to reduce child abuse and neglect, injuries, preventable acute and chronic illness, and the need for extended hospitalization and birth.

The objectives of prenatal care for the family during pregnancy and the first year of the infant's life are

*to promote family development, and positive parent-infant interaction;

*to reduce unintended pregnancies; and

*to identify for treatment behavior disorders leading to child neglect and family violence.

Components of Prenatal Care Delivery

Organized prenatal care delivery has been viewed for the last century as essential to the promotion of healthy outcomes of pregnancy for both the woman and the infant. The fact that many accepted prenatal care practices, including the recommended visit schedule, have not been validated as effective in reducing maternal and/or infant morbidity and mortality has not dimmed health professionals' belief and trust in the overall value of prenatal care.

The three basic components of prenatal care are (1) early and continuing risk assessment, (2) health promotion, and (3) medical and psychosocial interventions and follow-up. The specific content and timing of prenatal visits, contacts, and education should vary depending on the risk status of the pregnant woman and her fetus. Visits for women at no apparent risk should not be scheduled unless some specific activity needs to be performed, on the basis of the belief that visits themselves might create stress for some pregnant women (Merkatz & Thompson, 1990).

International Prenatal Care Delivery Studies

Infant mortality rates are generally lower in Western Europe than in the United States. This is a circumstance that has attracted comment from health and government policy analysts for several decades. Selected Western European nations were studied by a 15 member group

representing 10 countries and 10 different professional disciplines convened by the World Health Organization Regional Office for Europe (EURO) (Miller,1988). The countries surveyed had maternal and child health service delivery systems similar to the United States. Countries excluded from the survey were those with dissimilar delivery systems, populations of less than one million and countries with infant mortality rates higher than the United States (except for the United Kingdom and Belgium).

Demographics were scrutinized by the authors of this survey because comparisons of the human services offered in the United States and in European countries are sometimes discounted on the basis of the belief that the heterogeneity of the U.S. population complicates delivery of care more than in Europe (Brown, 1988). The authors contended that immigration since World War II of persons from the Middle East, North Africa, and various former colonies makes these countries more demographically similar to the United States. In support of their argument when the U.S. low birthweight rates are disaggregated by race, the rate for whites (5.6) is still substantially higher than the lowest European rates (4.0) (Brown, 1988).

The most important demographic difference between the U.S. and the European countries is the teenage pregnancy rates. Rates of teenage

pregnancy, abortion and childbearing are substantially lower in Europe (Brown, 1988). The rate of childbearing among 15-19 year olds in the 1980s was roughly three times higher in the United States than in European countries (Brown, 1988). A difference which is true for both black and white populations. However, the differences in low birthweight and infant mortality rates cannot be explained entirely on the different rates of teenage childbearing. When corrections are made for other known variables, the contribution of maternal age to low birthweight is small (Brown, 1988).

The per-capital gross national product (GNP) in the United States and Western Europe is high, but does not account for low rates of infant mortality. Household income in the United States is higher than that in six of the study nations with better records of infant survival (Brown, 1988). In addition, no country in the study spends as high a proportion of its GNP on health care as the United States.

The focus in improving prenatal care in Europe is on women who do not return after the first visit (Brown, 1988). Experts insist that attracting women to the first prenatal visit is not a problem because many perinatal benefits are contingent on confirming the pregnancy and registering it with the appropriate official agencies, tasks undertaken at the first visit (Brown, 1988).

Of importance to the present study is that all the countries studied with lower infant mortality and low birthweight rates than the United States require or recommend fewer prenatal visits and the actual number of prenatal visits attended is substantially less. While sufficient data are lacking to draw causal conclusions from the above, it is not unreasonable to propose that low-risk pregnant women in the United States should be able to attend fewer prenatal visits without adversely affecting perinatal outcome.

Prenatal Care Effectiveness

Timing and Frequency of Visits

In the United States, most of the research done on prenatal care has focused on the timing and frequency of visits (Hulesy et al, 1991; Tyson et al, 1990; Alexander et al, 1987; Moore et al, 1986; Showstack et al, 1984; Quick et al, 1981). Particular attention has been paid to when prenatal care is initiated and the number of visits accomplished by time of delivery but other methods for assessing prenatal care utilization have been employed as well.

Research studies vary in the precision with which they define prenatal care. Quantitative definitions are based on the number and timing of prenatal visits and are more prevalent than those based on content. The studies which examine the frequency and timing of prenatal care have

defined the construct in several ways. Prenatal care is usually measured as: 1) some prenatal care vs. no prenatal care (Moore et al., 1986; Tyson et al., 1990); 2) month or trimester of first prenatal care visit; 3) total number of prenatal care visits (Donaldson & Billy, 1984); and 4) an index which is a composite measure such as the Adequacy of Prenatal Care Index, or Kessner Index, developed by the Institute of Medicine (Kessner et al., 1973; Gortmaker, 1979; Showstack et al., 1984) or the GINDEX which is a redesigned measure of prenatal care utilization (Alexander & Corneley, 1987; Hulsey et al., 1991).

These measures of prenatal care do not take into account the quality or content of prenatal care, but simply the fact that a woman has attended prenatal care to some extent. This approach to measurement does not define the components of prenatal care but rather focuses on its frequency, timing, or mere presence. Prenatal care is conceptualized as a "black box". The pregnant woman receives the "treatment" and the outcome will presumably be positive.

The simplest and most frequently used measure is the timing of initiating prenatal care, measured as the month or trimester of pregnancy in which care was begun. The ACOG standards for prenatal care recommended starting care within the first trimester. Care begun in the second trimester is termed "delayed" care. Starting prenatal care in the

third trimester or making no visits at all is described as "late" care. A second measure which is used less often but is commonly available in published vital statistics is the number of prenatal visits made. The number of visits that is sufficient depends on the length of gestation and the health of the pregnant woman. Women who make 13 or more visits during a full term pregnancy is considered sufficient nine or fewer is insufficient and below the ACOG standard of care for women having full-term pregnancies.

A summary index was developed by the Institute of Medicine (Kessner et al., 1973). This index classifies women according to the adequacy of the prenatal care received in terms of both the timing of initiation and the appropriateness of the number of visits given the length of gestation according to the ACOG standards schedule.

The index was subsequently modified by Kotelchuck (1987) to produce a more accurate estimate in light of improvements in the data available. The modified version is known as the Adequacy of Prenatal Care Use (APCU). The categories of care are:

Adequate:	Care beginning in the first four months of pregnancy and 80 percent or more of the recommended number of visits were made, given length of gestation.
Intermediate:	Care begun in the first four months of pregnancy and 50-79 percent of the recommended number of visits were made, given length of gestation.

Inadequate:	Care was begun in the fifth month of pregnancy or later, or within the first four months, but fewer than 50 percent of the recommended number of visits were made, given length of gestation.

Further refinement of the Kessner index led to a redesigned measure of prenatal care utilization (GINDEX) (Alexander, et al., 1987). Additional categories were delineated to further define distinct patterns of prenatal care utilization. This measure focuses on the quantity and the initiation of care taking GA into consideration to control for the bias inherent in the number-of-visits variable resulting from its dependency on the duration of pregnancy. The classifications included in the GINDEX are:

Intensive prenatal care:	Greater than or equal to 16 visits for first trimester initiation of care; 13 visits for 2nd trimester initiation of care; 11 visits for 3rd trimester initiation of care;
Adequate:	7-15 visits for 1st trimester initiation of care;
Intermediate:	4-6 visits for 1st trimester initiation of care; 4-12 visits for 2nd trimester initiation of care;
Inadequate:	1-3 visits for 1st or 2nd trimester initiation of care; 1-10 visits for 3rd trimester initiation of care.

Two studies used this revised utilization index, Alexander and Cornely

(1987) and Hulsey, Patrick, Alexander and Ebeling (1991). Alexander and Cornely (1987) retrospectively reviewed 430,349 cases from South Carolina and North Carolina vital statistics from 1978-1982. Increased utilization of prenatal care was associated with higher mean birth weight and gestational age. However, after controlling for maternal risk status, an appreciable variation in birth weight and gestational age specific neonatal mortality was not apparent across prenatal care groups.

Prenatal Care and Perinatal Outcomes

Early prenatal care associated with lower risk of adverse pregnancy outcomes, even if the care itself is without any health benefit. It is less clear why these visits should matter or how many visits provide the critical threshold to make the difference in outcomes. Questions have recently been raised in the literature around the optimum number of prenatal visits (Thompson, 1990). While the number of visits that is sufficient depends on the length of gestation and the health of the pregnant woman, 13 or more visits during a full term pregnancy is considered sufficient. The proportion of women who make fewer than nine visits is presented as an indicator of insufficient care that is below the ACOG standards for women having full-term pregnancies. In contrast, the World Health Organization specifies a minimum of 5 visits to be sufficient during a full-term pregnancy. Guilkey (1987) and colleagues found that as few as three prenatal visits had a

significant positive relationship to birth outcome in the Philippines. In addition, Faundes et al (1982) also reported that women with less prenatal care than the WHO 5-visit minimum still had significantly better outcomes than women with token care or no prenatal care at all.

Inadequate or no prenatal care has been cited as a risk factor for low birthweight and other poor pregnancy outcomes. The positive impact of prenatal care on pregnancy outcome tends to be assumed in the American health-care literature. In the British literature questions have been raised about the effectiveness of prenatal care, particularly routine care for symptom-free women. Nevertheless, the research supports the correlation between prenatal care and improved outcomes (Moore et al., 1986; Tyson et al. 1990; Kay et al, 1991; Institute of Medicine, 1985).

The perinatal outcome most influenced by prenatal care is birthweight. Studies show that woman who attend prenatal care have heavier babies due to either a lower incidence of prematurity or less intrauterine growth retardation (IOM, 1985). Low birthweight infants are five times more likely than normal birthweight infants to die later in the first year, and account for 20 percent of postneonatal deaths (Wallace, 1988). The United States currently (1989) ranks 21st (9.7/1000 live births) among 29 countries with population greater than 2,500,000 with respect to infant mortality (Wegman, 1991). Low birthweight accounts for two-thirds of deaths in the

neonatal period (birth to 28 days of age) among infants born at 2500 grams or less (Wallace, 1988). In addition, the association between low birthweight and disorders of the nervous system such as cerebral palsy and seizure disorders has been well documented. Low birthweight infants are three times as likely as normal birthweight infants to have neurodevelopmental handicaps; the risk increases with decreasing birthweight (Wallace, 1988).

Moore et al. (1986) and Tyson et al. (1990) operationalized prenatal care as care vs no care. Moore, Origel, Key and Resnick (1986) conducted a retrospective study matching women (n=200) without prenatal care(less than three visits) to women receiving care in a state funded clinic by age, parity and week of delivery. They found that maternal obstetric outcomes, including C-Section rate and incidence of postpartum fever and hemorrhage were similar in the two groups but that infants of women receiving no care experienced significantly greater morbidity than the neonates of women in the state funded clinic. The no care group had an increased incidence of premature rupture of the membranes, preterm delivery, low birth weight, and admissions. The authors conclude that prenatal care results in a net reduction in perinatal morbidity and health care expenditures.

Tyson, Guzick, Rosenfeld, Lasky, Gant Jiminez and Heartwell (1990)

used a cohort of all women (n=28,838) who delivered during the study period at Parkland Memorial Hospital whose pregnancy reached a specific week of gestation to avoid the preterm delivery bias and then related their pregnancy outcome to their prenatal care status at that point. Prenatal care was defined as zero vs one or more visits. Separate cohorts were defined at 26, 30 34, 38 and 42 weeks. Prenatal care was associated with improved outcomes in only the 34, 38 and 42 week cohorts. Prenatal care was associated with a significant reduction in the proportion of small infants. The findings of this study indicated substantial benefit from prenatal care given after 30 weeks gestation, but not before. In contrast, ACOG standards call for approximately six prenatal visits before 30 weeks gestation. The value of prenatal care in early pregnancy vs that in late pregnancy warrants reevaluation with prospective, randomized studies to control for study biases.

Showstack, Budetti and Minkler (1984) used the Kessner index in evaluating prenatal care. Birth certificate data were used from 1978 to mothers who were residents of Alameda or Contra Costa counties, California (N=25,091). Adequate prenatal care was found to be associated with increased birthweight with the effects greater for black infants and infants of short length of gestation. However, a limitation of this study is that data recorded on birth certificates are not likely to be as accurate as

data collected directly from medical records. Although, birthweight and trimester of the start of prenatal care are generally reported relatively accurately.

To assume that more prenatal care visits and an earlier initiation of such care are the sole factors underlying variations in pregnancy outcomes is an overly simplistic interpretation, leading to potentially inappropriate conclusions, about future intervention strategies. Hulsey et al. (1991) conducted a retrospective investigation of patterns of prenatal care use and pregnancy outcomes in 6,176 singleton pregnancies without antepartum medical complications. The population studied was predominantly nonwhite and with relatively high gravidity. The study design controlled for a wide range of sociodemographic variables. However, one limitation of this study is that no data were reported on maternal smoking, alcohol, or substance use which can effect perinatal outcomes.

Hulsey et al . (1991) measured birthweight and gestational age categorically and looked primarily at low birthweight and preterm birth. The choice of outcome measures is difficult in women without complications; birthweight and gestation at delivery have the great advantage of having a value for every birth, at least in well documented cases. As expected more of the women with unfavorable sociodemographic characteristics

received inadequate or no care. Prenatal care was associated with significant reductions in the number of infants who were delivered preterm or had low birthweight. Their data suggest that significant improvements in pregnancy outcomes are seen among women who use prenatal care and these benefits occur in the absence of antepartum complications.

Binstock, Thompson, and Wolde-Tsadik (1992) conducted a study of prenatal care at Kaiser Permanente in Southern California. Pregnancy outcomes were examined in a prospective, non-experimental clinical trial in which women (n=401) were non-randomally enrolled upon entry into care into either an alternative prenatal visit schedule group or the control group which received traditional (ACOG, 1989) care. The alternative group received 8 prenatal visits as compared to an average of 12 visits in the control group. Care was provided by physicians, nurse-midwives or nurse practitioners. No significant difference was found between the two groups when evaluated for delivery or newborn outcome. Birthweight and gestation age were not significantly different. When the authors compared maternal demographics, no differences were found on the variables of age, parity, prior miscarriages or gestational age at first visit. The study group attended 8.2 visits which was significantly different (p=0.001) from the 11.3 visits attended by the control group. Additionally patient satisfaction in the study group was improved although not statistically significant.

Limitations of Studies of Prenatal Care

Several problems arise when prenatal care is studied by retrospective methods which examine frequency and timing of visits. Self-selection is a confounding variable in these studies. Women who do not receive prenatal care may still be inherently at higher risk for adverse outcomes than those who do receive care. Most of the studies showing a positive overall impact of prenatal care on pregnancy outcome have not been able to avoid the self-selection bias related to self-selection and length of gestation.

Prenatal care as a whole has never been evaluated by a randomized, controlled trial, since it is taken for granted that it would be unethical to withhold care from women who are in touch with health services. Although the benefits of care are considered to be so well established that they do not require further study (IOM,1985), it is far from clear whether outcomes are improved across the board, primarily in women at risk or only women actually experiencing complications.

There are several biases inherent in the retrospective study of the effectiveness of prenatal care delivery. First is the "preterm delivery bias". Women who deliver prematurely will have attended fewer visits because of having less time to receive prenatal care. In addition, women with pregnancy complications may attend more prenatal visits if they have mild

complications, or fewer prenatal visits if they have severe pregnancy complications and are hospitalized for any period of time. Additionally study results may be confounded by women who have had previously complicated pregnancies or chronic illness and seeking prenatal care earlier than those women who have had previously low-risk pregnancies and do not seek prenatal care until later in their pregnancies. These confounding factors may make it appear that frequent and early prenatal care is related to an increased number of complications in pregnancy and reduce the appearance of any apparent benefit of prenatal care.

Biases which are of major concern when studying the relationship of prenatal care to birth outcomes were outlined by Gordis et al. (1990) and are listed below:

1. Women who deliver prematurely will make fewer visits prenatally, thus resulting in an artifactual relationship between fewer prenatal visits and risk of preterm delivery.

2. Women who begin their care late in the third trimester of pregnancy cannot have premature delivery. This artificially lowers the association between late onset of prenatal care and risk of preterm delivery.

3. Women with medical or other complications of pregnancy may have more prenatal visits. The result is a reduction in the estimated risk associated with fewer prenatal visits.

4. Conversely women who are hospitalized for severe complications may have fewer prenatal visits thereby resulting in an artifactual relationship between fewer visits and severe pregnancy complications.

5. Women with adverse outcomes in prior pregnancies may also have more prenatal visits scheduled so that the estimated risk associated with fewer prenatal visits may also be reduced.

6. Self selection for early prenatal care is associated with women who are better educated and from higher socioeconomic status and have a more positive attitudes toward health care.

An additional limitation of retrospective prenatal care studies is the use vital statistic data as the outcome measure of prenatal care. The validity is often questioned as has been previously mentioned in this paper. The variable of frequency and timing of prenatal care is obtained by asking new mothers when the first prenatal visit occurred and how many prenatal care visits were attended during the pregnancy. Measures of prenatal care obtained from birth certificates is often assumed to be uniform but is subject to recall error.

There is a general consensus that antenatal care is beneficial. There has been a demonstrated statistical association between the number of antenatal visits and perinatal outcome, but there are many confounding factors. The attitude that "more is better" is often found in discussions of antenatal care. The impact of " the Maximum Strategy in Modern Obstetrics" has been profound in antenatal care (Lindmark, 1992). This strategy aims to make the best of the worst possible outcome, regardless of the individual probability that it will occur. It has support in public and

professional opinion but gives little credit for appropriate handling of normality without addition of unnecessary risk or strain. It is therefore easy to conclude that it is best to regard every pregnancy as potentially high risk under this philosophy.

Then why consider changes in the system of antenatal care? Several reasons have been cited and the rational for the care offered during normal pregnancy is thus: There are always groups of mothers who need more individual attention than the present system of routines allow. They do not benefit from a large number of short visits. The standard of care generally should be improved if health workers feel that the procedures they use are well validated and have clearly defined goals. Additionally, there is a very real risk that increased medical attention in normal cases may lead to unnecessary use of interventions and additional risk from the procedure itself as well as to adverse psychological consequences. There are also economic reasons to make the best possible use of the available resources (Lindmark, 1992).

In summary, research is needed to better define the appropriate system and contents of antenatal care. Studies should be conducted prospectively in order to eliminate many of the biases and limitations of studies to date. Future studies should not use only physiological variables and outcomes but include psychologic, social and economic variables,

because pregnancy and birth is as much a psychological and social as well as a biological process

Relationship Between Self-Care and Perinatal Outcomes

To date the relationship between self-care and perinatal outcomes has mostly comprised investigating the link between attending childbirth preparation classes and birth outcomes. Extensive research has shown that many factors contribute to the quality of the birth outcome which can be favorably affected by childbirth preparation. Studies have shown that women prepared for labor and delivery exhibit a higher level of awareness of the circumstances of the delivery and more positive reactions to the infants, choosing such options as rooming-in and breastfeeding (Cranley, Hedahl, & Pegg, 1983; Doering & Entwisle, 1975); Marut & Mercer, 1979). Preparation for labor and delivery events has also been shown to influence anxiety level of the mother, feelings of control, and husband or partner participation (Riesch, 1988). In addition a combined effect of childbirth education and the participation during labor of a significant other are associated with shorter labors (Bergstrom-Walan, 1963; Henneborn & Cogan, 1975; Huttel et al., 1972; Nunnally & Aguira, 1974; Sosa, Kennell, Klaus, Roberston, & Urrutia, 1980; Whitley, 1979), fewer medical complications (Scott & Rose, 1975; Hughey, McElin, & Young, 1978; Van Aukin & Tomlinson, 1953) and more sensitive interaction with the infant in

the immediate postpartum period (Cogan, 1980; Salk, 1970; Sosa et al., 1980).

Persons who actively participate in the events of childbirth experience an increase in self-esteem (Tanzer, 1972), greater internalized locus of control after delivery (Felton & Segelman, 1978) and less postpartum depression (Enkin, Smith, Dermer, & Emmett, 1972) when compared with those who have less preparation and participate less actively. Many researchers have documented a significant decrease in the use of analgesics and anesthetics in women who have prepared for childbirth (Bergstrom, Walan, 1963; Enkin et al., 1972; Huttel, Mitchell, Fischer, & Meyer, 1972; Laird & Hogan, 1956; Timm, 1979) This is an important outcome of childbirth education because pharmacological agents given during labor have been demonstrated to impair the infant's sucking ability (Kron, Stein, & Goddar, 1966) visual attentiveness (Stechler, 1964), responsivity to breast-feeding, alertness, organization, neurological responses (Brazelton, 1961) and electroencephalographic patterns correlated with behavioral impairment (Borgsteadt & Rosen, 1968). In addition, these biological, psychological and behavioral disruptions can in turn influence maternal-paternal-infant interaction, nutritional patterns and quality of life experienced by the neonate (Aleksandrowicz & Aleksandrowicz, 1975; Brazelton, Koslowski, & Main, 1974; Cronenwett &

Newmark, 1974; Korner, 1971; Parke & Sawin, 1976). All of these variables, self-esteem, postpartum depression, locus-of-control orientation, use of pharmacological agents, maternal awareness, and feelings of control, anxiety, length of labor, and medical complications seemingly contribute to a woman's abilities to exercise self-care agency (Riesch, 1988).

Riesch (1988) conducted a non-randomized, descriptive, one group pretest-posttest study (n=178) examining the extent to which childbearing dyads who enrolled in labor and delivery preparation classes exercise self-care agency. The study revealed that couples who had participated in a childbirth preparation series were found to report a greater degree of self-care agency than before participation. The analysis of the posttest scores indicated that childbirth education assists parents in exercising self-care agency. Though the scores demonstrated only a modest, but significant, gain (6 points) there is potential for development of strategies for improving the exercise of self-care agency to an even greater degree (Riesch, 1988).

Lederman (1984) demonstrated that pregnancy is a state of high receptivity to improved health practice. Perhaps with an emphasis on the exercise of self-care agency throughout pregnancy, not just for childbirth preparation, significant health improvement, which may even be long

lasting, could be seen.

Relationship between Self-Care and Prenatal Care

At some point during pregnancy, most women seek prenatal care. Commonly held expectations are that prenatal care can provide information, reassurance, medications, and early detection and treatment of problems with the pregnancy (Patterson, Freese & Goldenberg, 1990). Mechanic (1972) examined factors which influence use of prenatal health care services and found that the availability of services and resources alone were not enough to account for entry or non-entry into care. The client's willingness to seek care is also an important factor. Influencing this decision are education level, knowledge about health care, self-attitudes, and social and cultural factors.

Women's experiences, attitudes, and beliefs can be significant barriers to receiving adequate prenatal care (Christison-Lagay & Crabtree, 1986; Enkins & Chalmers, 1982; Greenberg, 1983; Haire, 1981; Herzog & Bernstein, 1964; MacIntrye, 1984; Poland, Ager, & Olson, 1987; World Health Organization, Regional Office for Europe, 1985). Some examples of these beliefs are that the system is unfriendly, past negative experiences of the patient, her family or friends, cultural values and practices, or a belief that pregnancy is a natural event that does not require medical attention. In addition, a perception that the patient is cared for and supported is

important, not just the absence of hostility (Curry, 1989).

Patterson et al. (1990) conducted a grounded theory study (n=27) to explore how women utilize health care during pregnancy. One aspect of the study was concerned with the processes used to achieve self-care during pregnancy. The investigators found that once a decision was reached to continue the pregnancy, "safe passage" was sought for both mothers and babies. For the majority of women, utilizing prenatal care was an important component of promoting a healthy pregnancy outcome.

Even though they knew they were pregnant, some women in the study chose to wait to seek care until later in pregnancy. Their rationale for waiting was that prenatal care was not indicated at that time in what appeared to them to be a healthy pregnancy. By waiting, unpleasant aspects of going for care such as long hours in a waiting room and physical examinations could be avoided for a period of time (Patterson et al., 1990). Various events served to end the waiting phase, such as a encouragement from others, physical symptoms detected by self-monitoring, and a desired need for information and/or reassurance (Patterson, et al., 1990).

The investigators found that one of the aspects of promoting safe passage was engaging in self-care. Many women spontaneously reported efforts to "take good care of myself." This was accomplished through changes in life-style, diet, rest, exercise, (decreased) consumption of

alcoholic beverages and use of medications (Patterson, et al., 1990). The authors cite that self-care was engaged in by women who came for care early, late, and not at all. It was clear from the data that women assume personal responsibility for seeking safe passage and since there is evidence that women take an active role in caring for themselves, it seems appropriate to begin to think about what aspects of prenatal care might be transferred to women to manage themselves (Patterson, et al., 1990).

Researchers have also demonstrated that increasing self-care increases satisfaction and compliance (Chang, B., Uman, G. & Linn, L., 1985: Harper, D., 1984). Experts in the self-care movement see it as a way to empower consumers and to return control of the health care to the client (Roberts, S. & Krouse, H. 1990). According to Roberts et al. (1990), if we are to empower consumers then nurses must engage in a deliberate process to foster control and greater responsibility in their clients. In order for the client to gain control we must abandon the current medical model in which the physician is the expert and the "patient" is the passive cooperator in the process.

In the current study, exercise of self-care agency was developed by the women in the intervention group taking an active role in their prenatal care. Women were given a daily self-care activity log to record the daily activities which they perform as part of their prenatal care self-care. They were

instructed to record how many hours they've slept at night, nutritional information, fetal movement counts, exercise, and information gained about pregnancy. In addition, when women came in for their prenatal office visit, they were instructed to take their own weight and check their urine for protein and glucose. They were then to record this information on their own prenatal record and convey the information to the clinic staff.

Women were encouraged to share their goals, questions and their perspective on any problems they may be having. The clients were asked to write down any concerns or questions they may have for discussion at each visit. The health care provider worked with the client to develop a plan of care based on both of their perspectives of the problem and will mutually agree on final decisions about care. This process allows the client to have her perspective of the problem acknowledged and his or her goals for the encounter made explicit (Roberts, et al., 1990). This process is similar to a negotiation model developed for nursing by Roberts and Krouse (1988). Research testing this model (Krouse et al., 1989) has demonstrated that clients feel more in control and more satisfied with the interaction. This process lessens conflict and distrust among laypersons and professionals by shifting the interaction from a hierarchic, independent-dependent one into an interdependent one (Roberts, et al., 1990)

Chapter 4

Methodology

Purpose

The purpose of this study was to determine the effects of an alternative prenatal care visit schedule on selected perinatal outcomes of low-risk women, anxiety, and maternal satisfaction with prenatal care. Low-risk pregnant women were randomally enrolled in a traditional prenatal care visit schedule group or an alternative prenatal care visit schedule group upon entry into prenatal care.

Also examined was whether women were able to adhere to an alternative visit schedule. Evaluation criteria which describe the process of receiving care and perinatal outcome criteria were also examined.

Evaluation of a prenatal visit schedule that addresses the needs of low-risk women is beneficial from both a provider and consumer standpoint. Women who are experiencing healthy pregnancies will spend less money on babysitters and transportation and need to take less time off work when they attend prenatal care less often. Health care providers will be available to see more women, thereby increasing access to care. Economically the best possible use of available resources may be made and benefit seen by decreasing expenditures on unnecessary interventions.

Design

An experimental, prospective, randomized design was used to evaluate the aims and hypotheses of the study. A prospective, experimental design with randomization of participants is important in controlling for known and unknown biases. A randomized controlled trial is the only form of evaluation of alternative forms of care in which we can be reasonably confident that an unbiased comparison has been made (Enkin, 1992).

Setting

The UCI Birthing Center, a free-standing birth center affiliated with the University of California, Irvine was the research site. Free-standing birthing centers are facilities separate from hospitals that provide maternity care to women experiencing normal pregnancies. The UCI Birthing Center is staffed by seven faculty certified nurse-midwives who provide full-scope care for women and their families during the childbearing year. Care is provided according to standardized clinical practice guidelines and in consultation as needed with the Medical Director or Assistant Medical Director. The faculty nurse-midwives also supervise and instruct student nurse-midwives, resident physicians, medical students and nursing students at the Birthing Center.

Women and their families attend prenatal care at the Birthing Center as well as labor and give birth there. Postpartum and newborn care is also

provided by the nurse-midwives. The Birthing Center participates in the state of California's Comprehensive Perinatal Services' Program. Women who participate in this program receive instruction in nutrition, health and pregnancy education, and have the availability of additional social services.

Following the birth, families stay at the Birthing Center for approximately 12 hours. The maximum stay is 24 hours from admission to discharge. Public health nurse referrals are initiated at the time of discharge on all new mothers and infants for a two day visit. Clients are also instructed to return in 2-3 days for a newborn physical examination, which includes a breastfeeding evaluation, if needed. Maternal postpartum physical exams are than scheduled for 4-6 weeks after the birth.

Sample

Approximately 50 pregnant women initiate care at the Birthing Center each month. There was no difference in the cost to the client for pregnancy care whether in the control or intervention group from the costs involved for the usual pregnancy care that is present for similar clients not involved in the study. About 80% of these women were eligible for inclusion in the study.

The women who attend prenatal care at the Birthing Center are an ethnically diverse group and primarily of low socio-economic status.

Approximately 80% of the women are Hispanic, with the majority speaking Spanish only. The other 20% are Caucasian, Asian, African-American and from other ethnic groups.

Inclusion criteria are as follows:

1) 18 years of age or greater
2) Low-risk pregnancy status (See Appendix A)
3) Prenatal care started no later than 26 weeks gestation
4) Able to speak/read English or Spanish .

Exclusion criteria are as follows:

1) Less than 18 years of age
2) Ineligible for care at the UCI Birthing Center--due to high-risk status. For example women with chronic illnesses, multiple gestation etc. (See Appendix A).
3) Prenatal care started at greater than 26 weeks gestation
4) Non-English or Spanish speaking/reading.

Teens (less than 18 years old) are thought to need increased prenatal visits, not less, related to a increased need for teaching and psychosocial support, and therefore would probably not benefit from a visit schedule such as the one proposed. Low-risk, in this context, is defined as those women who meet the eligibility requirements for care at the Birthing Center (Appendix A) ie., pregnant with a single fetus, no chronic illness, such as hypertension, cancer, cardiac disease, or diabetes, a negative history for previous Cesarean-Section, premature birth (before 35 completed weeks gestation), or a previous still birth. A "yes" response to any of the questions on the Birthing Center risk screening questionnaire (Appendix A) disqualifies a woman from receiving care at the Birthing Center and she is

then referred for care either to the tertiary medical center or elsewhere.

Women who initiated prenatal care before the third trimester of pregnancy (26 weeks) were included in the study, in order for there to be sufficient time for the intervention to take place. Only women who speak and read Spanish or English were included in the study due to limited resources for translating the instruments, client information handouts and consent form.

Sample Size

Sample size for this study was determined through statistical calculations in consultation with a faculty statistician at the UCLA School of Nursing. A sample size was determined which would provide adequate power to detect differences in the two groups. A statistical power analysis using a power of .80 and an alpha of .05 suggests that sample size for each group be composed of a minimum of 37 participants in order to detect a large effect when using T-tests to compare group means. For a statistical analysis comparing proportions a similar sample size is needed.

For more complex analysis, such as multiple regression, a general consensus is that at least 5 participants per each independent variable be used. The proposed sample size for this study is 74 participants in the two groups combined .

Study Variables

Operational definitions of variables are found at the end of this chapter. The following is a list of those variables measured in the study.

Dependent Variables

The dependent variables to be measured in the study are the following:

- Psychosocial:
  - Maternal Satisfaction with Prenatal Care
  - Anxiety
- Perinatal Outcomes:
  - Infant Health:
    - Gestational age at delivery
    - Birthweight
    - Number of inpatient hospital days immediately following birth
    - Neonatal medical complications
  - Maternal Health:
    - Total average weekly weight gain during prenatal care
    - Maternal medical and/or obstetrical complications
    - Number of inpatient hospital days and hospitalizations
  - Intrapartum Events:
    - Type of delivery.
    - Primary Provider at Birth
    - Length of Labor: Active phase (4-10cm dilation) and Second Stage (complete dilation until delivery)
    - Medication use in labor

Independent Variable

The independent variable in this study is the prenatal care visit schedule delivery model; the alternative prenatal care visit schedule vs the traditional prenatal care visit schedule. The evaluation of the independent

variable will be accomplished by chart review after the participant gives birth. The following items for evaluation of prenatal care delivery will be assessed:

Number of regularly scheduled prenatal visits attended
Number of unscheduled office outpatient visits
Number of phone calls
Number of "no show" visits
Number of Evaluation Room visits at UCIBC
Number of Emergency Room hospital visits

Extraneous Variables

The information on background and personal characteristics will be collected by having the participant complete a questionnaire covering these items.

Background and Personal Characteristics:

Gestational age at entry into prenatal care
Maternal age at delivery
Years of education completed
Marital status
Occupational status
Ethnic/racial background
Height
Current weight
Body Mass Index
Interpregnancy interval
Parity
Gravidity

Intervening Variables

The relationship between the independent variable and the dependent variables may in some cases be influenced by a third set of variables, the

intervening variables (Burns & Grove, 1987). The following intervening variables will be assessed by the Personal/Background Characteristic questionnaire, the Maternal Social Support (Pascoe, 1984) and the Sense of Coherence questionnaire (Antonovsky, 1987):

Type of Health Insurance
Childbirth Preparation Class Attendance
Smoking Status
Substance abuse
Alcohol Use
Social Support
Sense of Coherence

Mediating Variable

Self-care is the mediating variable in this study. The intervention, or independent variable, is designed to enhance the individual's ability to exercise self-care activities which may then affect the dependent variables.

Procedure

Prior to data collection, permission to conduct the study was obtained throught the University of California, Irvine Human Subject's Review Committee (Appendix B). Letters of support were also solicited and received from the OB/GYN Department Chair, the Nurse-Midwifery Division Chair, and others instrumental in the conduct of the study (Appendix C).

A cover letter in Spanish or English was attached to the Birthing Center health assessment questionnaire which was completed at the registration

appointment The letter explained the study and invited the woman to participate in the study. If the client indicated a desire to participate, a follow-up contact by telephone or in person was conducted to further explain the study. The consent form was signed at the first prenatal visit or earlier, if the client was interested in participating.

Upon consenting to participate in the study, women were asked to complete the Time 1 questionnaires, namely the Maternal Social Support Index (MSSI), the Demographic and Personal Background Characteristics Questionnaire, the Exercise of Self-Care Agency (ESCA) instrument and the Sense of Coherence (SOC) questionnaire. A quiet, secluded place was provided for their comfort. The principal investigator was available to assist them with a questions they may have had.

After completion of the questionnaires, random assignment into groups was implemented by computer software program (Conlon & Anderson, 1990). In some cases, computer randomization occurred before the first questionnaires were completed, but after the consent form was signed, using the Birthing Center health assessment questionnaire data. Randomization is beneficial in that it controls for selection bias and helps to achieve a balance between intervention and control groups by controlling for factors correlated with outcomes. Simple random assignment is easy to implement since it requires no information regarding the subject

adequate to balance the total number of subjects assigned to each group and the number of subjects with various important prognostic (covariate) values assigned to each group (Conlon & Anderson (1990). The software program designed by Conlon & Anderson (1990) randomly assigns participants into groups while also allowing for stratification to improve assignment balance. Variables used in this study in the stratified randomization process were derived from factors identified in other prenatal care studies which were believed to affect perinatal outcomes.

Participants were assigned to group by stratified random assignment according to the following variables:

1. parity,
2. Body Mass Index,
3. gestational age at entry into prenatal care,
4. transfer of care from another provider,
5. health insurance type,
6. smoking status,
7. language spoken,
8. history of illicit drug use,
9. history of alcohol use,
10. ethnicity, and
11. marital status.

The intervention group attended prenatal care according to the alternative visit schedule and the control group attended prenatal care according to the usual (ACOG, 1989) visit schedule. A sample visit schedule for both groups is outlined below in Table 1.

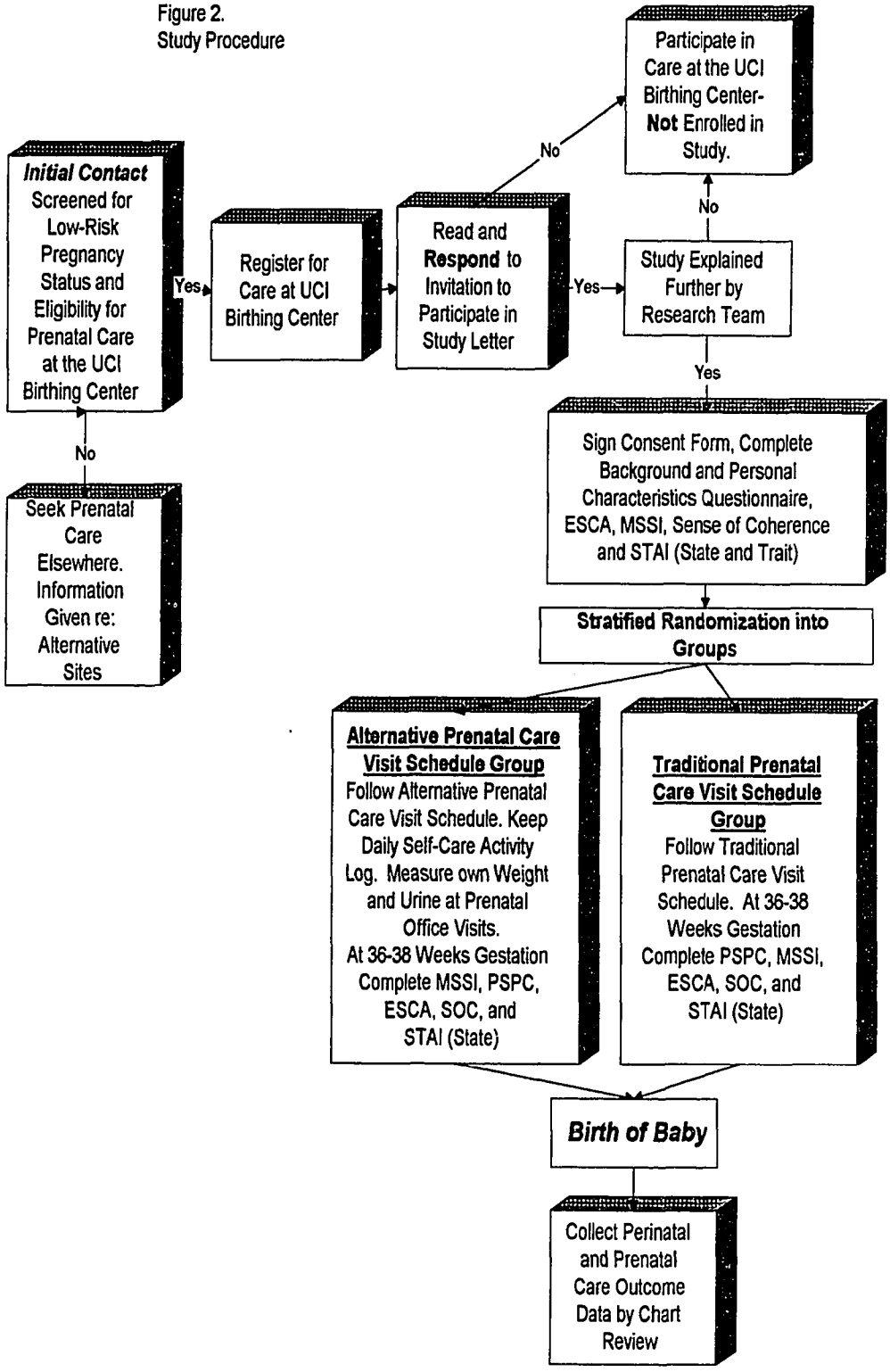
Group	Prenatal Visit Schedule (Weeks Gestation)
APCVSG	6-8 15-19 24-28 32 36 38 39 40 Weekly
TPCVSG	6-8 10-12 14-16 18-20 22-24 26-28 30 32 34 36 37 38 39 40 Weekly

Table 1. Prenatal Visit Schedule by Study Group

This chronological alternative visit schedule is based upon scientific literature review and adapted from the visit schedule proposed by the Expert Panel on Prenatal Care (1989) regarding optimal timing for identifying and modifying risk and the success of medical and psychosocial interventions. The intervention group was scheduled to attend a total of approximately 8 prenatal visits, depending on when prenatal care was initiated and when the birth occurred, as opposed to a possible 14 regularly scheduled prenatal visits for the control group.

Women initiate prenatal care at different times during their pregnancies. After the first visit, the women in the intervention group were given an appointment to return for care at the next designated time (weeks of pregnancy) according to the alternative visit schedule. For example, if a woman had her initial visit when at 10 weeks pregnant, she was then scheduled to return for her next visit at 14-16 weeks and followed the alternative visit schedule from there on out, unless, of course a complication developed and she needed to be seen more frequently.

Figure 2.
Study Procedure



Women in the control group followed the ACOG (1989) guidelines for prenatal care visits; after the initial visits they were seen every four weeks until 28 weeks, every 2 weeks until 36 weeks, and then weekly until delivery. Women in the control group were also scheduled for visits more frequently if needed.

The study procedure is diagrammed above in Figure 2. All women were screened for risk status before being accepted into care (Appendix A) and only low-risk women were accepted into the study. Risk status was continuously assessed during prenatal care in both groups. Continual risk assessment, which is one of the components of prenatal care, was performed at each visit. Data were maintained on women experiencing a change in risk status which necessitated transfer to physician care at the UCI Medical Center and women who transferred care for other reasons. If the woman's risk status changed and she required a different prenatal care schedule or transferred to physician care at the UCI Medical Center, perinatal outcomes were assessed as this is important information and relevant to the study.

Prenatal Care Content

The content of the prenatal care was the same for both groups. The following is a summary of prenatal care content delivered according to weeks of pregnancy for women in both the traditional and alternative

groups. It cannot be stressed strongly enough that what is described below is the minimum prenatal care content. Additional laboratory tests, other diagnostic tests, examinations, and further education was provided as indicated according to the women's health status (in either group) and the clinical practice guidelines followed by the nurse-midwives at the UCI Birthing Center.

	Alternative Prenatal Care Group (APCVSG) Approximately 8 visits.	**Traditional Prenatal Care Group (TPCVSG) Approximately 14 visits.**
Initial Visit: (45 minutes)	History and Physical Exam Risk Assessment Prenatal Laboratory tests Fetal Evaluation Education on healthful behavior, pregnancy and prenatal care.	History and Physical Exam Risk Assessment Prenatal Laboratory tests Fetal Evaluation Education on healthful behavior, pregnancy and prenatal care.
10-12 wk visit: (15 minutes)	No scheduled visit	Interval history since last visit Risk assessment Physical exam Evaluation of fetal well-being Health promotion counseling and pregnancy information.
15-19 wk visit: (15 minutes)	Lab test: Maternal serum alpha-fetoprotein (MSAFP). Interval history since last visit Risk assessment Physical exam Evaluation of fetal well-being Health promotion and pregnancy information	Lab test: Maternal serum alpha-fetoprotein (MSAFP). Interval history since last visit Risk assessment Physical exam Evaluation of fetal well-being Health promotion and pregnancy information
18-20 wk visit: (15 minutes)	No scheduled visit	Interval history since last visit Risk assessment Physical exam Evaluation of fetal well-being Health promotion and pregnancy information

	APCVSG	TPCVSG
22-24 wk visit: (15 minutes)	No scheduled visit	Interval history since last visit Risk assessment Physical exam Evaluation of fetal well-being Health promotion and pregnancy information
24-28 wk visit: (APCVSG) 26-28 wk visit: (TPCVSG) (15 minutes)	Laboratory test: One-hour GTT Interval history Risk assessment Physical exam Evaluation of fetal well-being Health counseling, pregnancy information and fetal mvmt. awareness education	Laboratory test: One-hour GTT Interval history Risk assessment Physical exam Evaluation of fetal well-being Health promotion pregnancy info. and fetal mvmt. awareness education
30 wk visit: (15 minutes)	No scheduled visit	Interval history since last visit Risk assessment Physical exam Evaluation of fetal well-being Health promotion and pregnancy info. and fetal mvmt. awareness education
32 wk visit: (15 minutes)	Interval history Risk assessment Physical exam Evaluation of fetal well-being Health promotion pregnancy info. and fetal movement awareness education	Interval history Risk assessment Physical exam Evaluation of fetal well-being Health promotion pregnancy info. and fetal mvmt. awareness education
34 wk visit: (15 minutes)	No scheduled visit	Interval history since last visit Risk assessment Physical exam Evaluation of fetal well-being Health promotion and pregnancy information and fetal mvmt. awareness education
36 wk visit: (15 minutes)	Lab tests: Blood Type , VDRL Interval history Risk assessment Physical exam Evaluation of fetal well-being Health promotion pregnancy info. and fetal movement awareness education	Lab tests: Blood type, VDRL Interval history Risk assessment Physical exam Evaluation of fetal well-being Health promotion pregnancy info. and fetal mvmt. awareness education

	APCVSG	TPCVSG
37 wk visit: (15 minutes)	No scheduled visit	Interval history since last visit Risk assessment Physical exam Evaluation of fetal well-being Health promotion and pregnancy information and fetal movement awareness education
38 wk visit: (15 minutes)	Interval history Risk assessment Physical exam Evaluation of fetal well-being Health promotion pregnancy info. and fetal movement awareness education	Interval history Risk assessment Physical exam Evaluation of fetal well-being Health promotion pregnancy info. and fetal mvmt. awareness education
39 wk visit: (15 minutes)	Interval history Risk assessment Physical exam Evaluation of fetal well-being Health promotion and pregnancy information and fetal mvmt awareness education	Interval history since Risk assessment Physical exam Evaluation of fetal well-being Health promotion and pregnancy information and fetal mvmt awareness education
40 wk visit: (15 minutes)	Interval history Risk assessment Physical exam Evaluation of fetal well-being Health promotion pregnancy info. and fetal movement awareness education	Interval history Risk assessment Physical exam Evaluation of fetal well-being Health promotion pregnancy info. and fetal mvmt. awareness education
41 wk visit: (and weekly until delivery) (15 minutes)	Interval history Risk assessment Physical exam Evaluation of fetal well-being Health promotion pregnancy info. and fetal movement awareness education Start biweekly fetal well being testing.	Interval history Risk assessment Physical exam Evaluation of fetal well-being Health promotion pregnancy info and fetal mvmt. awareness education Start biweekly fetal testing

The length of time allotted for outpatient prenatal visits was the same for both the intervention and control group. An initial evaluation visit was allotted 45 minutes, with 15 minutes allowed for a return OB visit.

Prenatal Health Care Education

Education by the health care providers occurred throughout pregnancy. Specific topics were covered during each trimester. The content and timing of the prenatal education was the same for both study groups. The schedule of topics covered was as follows:

First Trimester	Second Trimester	Third Trimester
*Risks and Complications	*Prenatal Classes	*Signs and *Symptoms of Premature Labor
*Smoking/Drugs/ETOH use	*Diet/Nutrition/Wt. Gain	*Contraception
*Diet/Nutrition/Weight Gain	*MSAFP	*Infant Feeding
*Exercise	*Exercise	*Infant Care
*Sexual Activity	*Fetal Movement Counts	*Labor and Birth Instructions
*Common Complaints		*Signs and Symptoms of PIH
		*Diet/Nutrition/Wt. gain

Women in the alternative prenatal care group were instructed to weigh themselves and test their urine sample while awaiting to be seen by the nurse-midwife. Should the weight or urine test appear abnormal, the nurse-midwife or clinic staff rechecked the result. These simple activities are important in enhancing the self-care capabilities of the women and facilitating the process of taking responsibility for their health. For the women in the traditional care group, the clinic staff performed the urine test and weighed the study participant.

Additionally the women in the intervention group were instructed to keep

a daily self-care activity log (Appendix D) throughout their prenatal course and return it to the investigator after the birth of their baby. By completing the daily log, women in the alternative group would be reminded to follow the same healthy practices that the women in the traditional group were reminded of at their more frequent appointments. Since women in the alternative group were not seen by the prenatal care providers as often, the the rationale for the daily log was that it would serve as a reminder to follow healthy pregnancy practices. In addition, the log included a list of questions and concerns specific to gestational age of pregnancy to be covered with the prenatal care provider at each visit and a reminder of when participants should schedule their next appointments.

Participants in the alternative group were provided with this log at the beginning of their prenatal care and instructed to keep a daily account of the activities which they performed to help themselves have a healthy pregnancy and baby. They were not given any more instruction than the traditional care group as to what these activities were in order to keep the content of prenatal care the same for both groups.

Instruments

All instruments, which had not been previously translated, were translated into Spanish and then back translated into English to validate the accuracy of the translation of the instruments before administration.

Women in both groups were asked to complete the following questionnaires at entry into the study (Time 1): the Maternal Social Support Index (MSSI), the Exercise of Self-Care Agency Scale (ESCA), the Speilberger State-Trait Anxiety instrument (STAI), the Sense of Coherence (SOC) instrument, and a demographic and background questionnaire, developed by the investigator for this study, at entry into care. At approximately 36-38 weeks of pregnancy (Time 2), the Patient Satisfaction with Prenatal Care (PSPC), the MSSI, the ESCA, the STAI (state) and the SOC instruments were completed by participants. Data on the perinatal outcomes of infant health, maternal health and the intrapartum events were extracted from the participant's medical record after the birth of the baby (Time 3). Participants were provided a quiet place, free from distractions to fill out the questionnaires. Copies of the instruments are located in Appendix E.

The questionnaires to collect the background and personal characteristic data and the perinatal outcome and prenatal care evaluation were developed by the investigator. The face and content validity of both questionnaires was confirmed by a six-judge panel composed of experts in research, public health, nurse-midwifery, and obstetrics and gynecology and nursing. Minor changes were made based on their recommendations. Perinatal outcome data and data to evaluate prenatal care was extracted

from the medical record by the principal investigator. Table 2 below presents a summary of the data collection instruments and the timing of administration.

Instruments	Time 1 (Entry into study)	Time 2 (36-38 weeks of pregnancy)	Time 3 (After birth of the baby)
Background/Personal Characteristics Questionnaire	X		
MSSI	X	X	
ESCA	X	X	
Trait Anxiety	X		
State Anxiety	X	X	
SOC	X	X	
PSPC		X	
Perinatal Outcomes/ Prenatal Care Evaluation			X

Table 2. Summary of the Data Collection Instruments and Timing of Administration

Maternal Social Support Index

The Maternal Social Support Index (Pascoe et al, 1988) is an 18-item self-report questionnaire designed to assess qualitative and quantitative aspects of social support. It evaluates the emotional and tangible support provided by a mother's social network of partner, friends, relatives and community organizations. The MSSI measures the amount or support and reported satisfaction with support rather than the structure of the supportive social network. It provides information about women's perceptions of their help with daily tasks, satisfaction with relationships, availability of

emergency help and degree of community involvement. A low score on the MSSI has been associated with a lower degree preschool home stimulation, child maltreatment, and low birthweight (Pascoe et al., 1987).

MSSI questions can be grouped into four areas, help with daily tasks, satisfaction with relationships and availability of emergency help and degree of community involvement. A sample of items which evaluate help with daily tasks consists of "Who fixes meals?", "Who does the grocery shopping?" and "Who does the inside cleaning?". Satisfaction with relationships is evaluated by questions such as "Do you have a boyfriend or husband?", "Would you like to see relatives: More often, Less often, It's about right", and "Are there adults, not including your boyfriend or husband, with whom you have regular talks?. Availability of emergency help is assessed by items such as "How many people can you count on in times of need?" and "How many of people would be able to take care of your children for several hours if needed?". Items which deal with degree of community involvement are "Are you a member of any committee or do you have any other duties in any of you groups" and "How often do you attend meeting of the following groups-Religious, Education, Social, Political and Other" for example.

Data from three clinical sites, a prenatal clinic, a pediatric clinic and a psychology clinic (n=488) demonstrated coefficient alphas ranging from .60

to .63. To measure internal consistency, coefficient alphas were computed on the entire index for each subgroup. The prenatal care subgroup (n=198) women were younger, more likely to be of a minority race, less educated, less likely to be married and had lower annual incomes compared to the pediatric clinic and psychology clinic subgroups (Pascoe, 1988). The Pearson correlation coefficient for the MSSI test-retest score was .72 for a subgroup of prenatal clinic subjects (n=198). For the prenatal clinic subgroups the coefficient alpha was .72 for the child care cluster and .78 for the cluster composed of tasks not directly related to child care.

Concurrent validity of the MSSI was examined by calculating zero-order Pearson correlation coefficients among the MSSI, the Dyadic Adjustment Scale (DAS) and the Center for Epidemiologic Studies Depression Scale (CES-D) and the Family Relations Subscale of the Personality Inventory for Children (PIC) (Pascoe et al., 1988). Moderate but statistically significant correlations were obtained between the MSSI and the PIC and DAS; -.498 and .393 respectively. The PIC correlates negatively because higher scores reflect more family pathology (Pascoe et al., 1988). The CES-D, an instrument in which a high score reflects more depressive symptomatology, also had a negative but statistically significant, though slightly weaker correlation, -.296 (Pascoe et al., 1988).

The MSSI is a reliable instrument with moderate internal consistency

and concurrent and predictive validity. A maximum score of 39 points indicates a high degree of social support in the previously discussed areas. In a group of primiparous mothers (n=100) who were asked to complete the questionnaire within 72 hours of birth the mean score was 26.5 and a range of 15-37 points.

Exercise of Self-Care Agency Scale

Self-care will be measured using the Exercise of Self-Care Agency (ESCA) scale developed by Kearney and Fleischer (1979). The ESCA is based on the construct of self-care as proposed by nurse theorist Dorothy Orem (1980). Self-care agency is broadly defined as referring to the capabilities of individuals that enable them to engage in self-care (Gast et al., 1989).

The ESCA is a 43-item scale. A 5-point Likert-type scale is used to score each self-care item from 0-4 according to the subject's response. A 0 score is assigned to the response "very uncharacteristic of me," while a score of 4 is assigned to the response "very characteristic of me." The scoring is reversed on eleven of the items which are worded negatively with respect to exercise of self-care agency. The score is obtained by adding together all of the marked responses. The maximum attainable score is 172, which indicates a high degree of exercise of self-care agency.

The ESCA is based on four subconstructs that contribute to a person's

exercise of self-care agency: (1) an active versus passive response (2) motivation, (3) knowledge base, and (4) sense of self-worth. An example of items in the first subconstruct of active vs passive response are "I seek help when unable to care for myself", "I perform certain activities to keep from getting sick", and "I complain a lot about the things that bother me without doing much about them". Items relating to motivation are, "I strive to better myself", "I often put off doing things that I know would be good for me", and "I seek information to care for myself". The subconstruct of knowledge base is evaluated by items such as "I know my strong and weak points" and "I know who to get the facts I need when my health feels weakened". The construct of self-worth is assessed by the following items, "I like myself", "I make my own decisions" and "When I have a problem, I usually want an expert to tell me what to do."

Kearney and Fleischer (1979) report a test-retest coefficient of r=.77 for a sample of 76 nursing students. Internal consistency reliability coefficients have ranged from .77 to .80 on samples of nursing (N=7,984) and psychology (n=153) students. Construct validity was established comparing the ESCA with the Internal-External Locus of Control Scale (Rotter, 1966) and the Adjective Check List (Gough & Heilbrun, 1965).

Patient Satisfaction with Prenatal Care

The Patient Satisfaction with Prenatal Care (PSPC) (Omar & Schiffman,

1992) instrument is designed to assess women's satisfaction with prenatal care services. Accurate assessment of patient satisfaction with prenatal care is thought to be essential in improving care (Omar, 1992). The PSPC is currently in its second revision. Data from the initial instrument demonstrate Cronbach alpha coefficients ranging from .72 to .93 (Omar & Schiffman, 1994) for items such as expectations of prenatal care, and satisfaction with provider, staff, and prenatal care system. The first instrument was tested with women in the latter part of their pregnancies attending prenatal clinics and childbirth education classes in three sites, an urban health department (n=170), an urban private physician setting (n=226) and a rural health department clinic (n=191) (Omar & Schiffman, 1994).

The total sample of participants (n=587) were from varied sociodemographic backgrounds. Expectations of prenatal care were highest among the urban health department clients (M=2.86) followed by the rural clients (M=2.94). Clients attending care in the urban private physician setting (M=3.03) had the lowest expectations of prenatal care. Women receiving prenatal care in the rural clinic were the most satisfied of the three groups with their prenatal care provider (M=1.94), followed by the urban health department women (M=2.01) and the women receiving care in the urban private physician setting (M=2.33). Satisfaction with the office

staff was highest among the women in the urban health department (M=1.92), the women attended by the urban private physician (M=2.07), and the women attending care in the rural health department (M=2.13). Women in the urban private physician setting and those receiving care in the rural health department (M=2.0) were the most satisfied with the prenatal care delivery system. Least satisfied with the prenatal care delivery system were the women receiving care at the urban health department (2.54).

State/Trait Anxiety

Anxiety was measured by the Speilberger State/Trait Anxiety Inventory (STAI) (1980). The STAI is comprised of separate self-report scales for measuring state and trait anxiety. Both state and trait anxiety were measured at entry into the study and only state anxiety measured at 36-38 weeks gestation. The state portion of the STAI consists of twenty statements that evaluate how respondents feel "right now, at this moment". The trait portion consists of twenty item which assess how people generally feel. Both scales use a Likert scale with state anxiety responses ranging from 1 "not at all" to 4 "very much so", and trait anxiety ratings from 1 "almost never" to 4 "almost always". Two sample items from the state anxiety scale are " I feel self-confident", and " I am jittery". Two sample items from the trait anxiety scale are "I have disturbing thoughts" and "I feel

satisfied with myself".

Scores range from a possible 20-80 points, with higher scores indicating more anxiety. Mean scores for the total trait anxiety instrument for working, adult women 30-39 years of age are 36.15 (SD=9.53) and mean scores for the same group on state anxiety are 36.17 (SD=10.96) (Speilberger, 1980). Alpha reliabilities have been reported as ranging from .92-.95 (Speilberger et al., 1980).

Sense of Coherence

Sense of coherence was measured by the abbreviated 13-item Sense of Coherence questionnaire (SOC) (Antonovsky, 1987). Sense of coherence consists of three general concepts that include "comprehensibility", "manageability", and "meaningfulness" of one's life. Two sample items from the SOC questionnaires are "In the past you were surprised by how good friends acted" and "You have feelings inside you'd rather not feel".

The SOC questionnaire from which the 13-item instrument originated was a 29-item scale. The reported Cronbach alpha coefficient on the 29 item scale ranged from .84 to .93 (Antonovsky, 1987). The 13-item scale used in this study employs a 5-point Likert scale ranging from 1 "not having this feeling" to 5 "always having this feeling". A mean score is then derived for the 13-items. Nyamathi (1991) reported an internal consistency reliability coefficient for the 13-item questionnaire of .76.

Pilot Testing

A convenience sample of 5 English-speaking Hispanic clients all in their last trimester of pregnancy were administered the Maternal Social Support Index, the Exercise of Self-Care Agency Scale and the Patient Satisfactions with Prenatal Care instrument. The demographic characteristics of these clients is similar to the study sample. This pilot test of the standardized instruments was undertaken to evaluate whether the Birthing Center clients would be able to understand the questionnaires and the instructions in completing the questionnaires. All questionnaires were completed by the women with a minimum of incomplete or missing responses.

Statistical Analysis

Prior to testing the hypotheses, descriptive statistics, baseline comparison of groups, and comparison of sample to dropouts was conducted.

Descriptive Statistics

Descriptive statistics will be given for all variables for the intervention (APCVS) group, the control (TPCVS) group and for the entire sample. Summary measures will be chosen, appropriate to the specific variable eg., means and standard deviations for variables measured at an interval level, frequencies and percents for variables at nominal levels. Other

distributional characteristics (such as skewness) will be assessed as required by hypothesis testing approaches.

Baseline Comparison of Groups

To establish equivalence of groups, the APCVS group and the TPCVS group will be compared on background characteristics including age, ethnicity, marital status, education, social status, and obstetric history. Differences will be evaluated using t-tests, ANOVA, or chi-square statistics appropriate to the measurement level of the variable. Because of random assignment to intervention or comparison group, the two groups are not expected to differ in any systematic way that would affect the impact of the intervention. However, if substantial differences in the groups exist, then the relevant characteristics can be included in subsequent analyses as control variables.

Dropouts

Dropouts, such as those participants who transfer their prenatal care to another provider or whose care is transferred due to change in risk status, and subjects remaining in the study will be compared on variables collected at entry into the study, and after the birth of their baby where information is available. Participants whose outcome data are not available after the birth of their baby, i.e. those who relocate to another city or state, will be compared on variables collected at entry into the study, including

background characteristics. The groups can be compared using t-tests, ANOVA or chi-square statistics depending on the measurement levels of the variables.

Hypothesis testing

All the hypotheses were tested with alpha=0.01. Hypotheses 1 and 2 (Aims 1 and 2) were tested using analysis of variance (ANOVA) procedures (general linear model). Separate analyses were performed for each outcome variable. Individual consideration of each of the outcome measures is important because these variables have both clinical significance and social value in terms of economic costs and future life course.

For hypotheses 3a, b, c, d (Aim 3) statistical analyses examined the relationship between the independent variable, self-care and the outcome variables. Hypothesis 3a was evaluated using analysis of variance procedures for comparison across groups which is appropriate for the interval level data obtained from the self-care instrument. Hypotheses 3b, c, and d were assessed using Pearson correlation coefficients.

Aim 4 was explored using multiple regression procedures to assess the relative explanatory capabilities of background variables, the intervention (grouping and intensity) and self-care measures on each outcome variable. A hierarchical approach was used with background variables entering the

equation first (with stepwise entry of individual background variables, followed by intervention group and self-care).

Aim 5 was assessed using analysis of variance or non-parametric statistical tests depending on the level of data, for example number of prenatal visits, number of emergency room visits etc., and whether these data meet the statistical assumptions for parametric data, ie. normal distribution, random sampling technique, and at least interval level data. Nominal or ordinal data will be analyzed using the nonparametric chi square test or other appropriate statistical tests.

Aim 6 was evaluated using analysis of variance due to the interval level data. Data was collected on charges acquired by study participants during their prenatal care, birth and immediate postpartum and newborn period. The UCI Medical Center Finance Office provided data on costs incurred by study participants.

Operational Definitions of Terms

Dependent Variables

Psychological Outcomes:

Maternal Satisfaction with Care: As measured by the Patient Satisfaction with Prenatal Care instrument developed by Omar & Schiffman (1992).

Anxiety: As measured by the Speilberger State/Trait Anxiety Inventory (1970) instrument.

See Appendix E for copies of both instruments.

Perinatal Outcomes:

Infant Health:

Gestational age at delivery: Calculated by the total number of completed weeks of pregnancy from the last menstrual period until the birth of the baby, or by ultrasound estimation if redated by ultrasound examination.

Birthweight: Measured in grams within the first hour or two after the birth of the baby.

Number of inpatient hospital days immediately following birth: The length of time measured in days which the newborn infant spends in the hospital (NICU or Newborn Nursery) immediately following birth.

Maternal Health:

Average weekly weight gain: The amount of maternal weight, measured

in pounds, gained during the prenatal care course. Calculated by subtracting the weight obtained at the first prenatal visit from the last prenatal weight obtained before birth, then divided by the number of weeks in prenatal care.

Maternal medical and/or obstetrical complications: Measured by adding the number of diagnoses made of maternal medical and/or obstetrical complications during the perinatal period. Type of diagnosis will also be examined.

Number of inpatient hospital days and hospitalizations: The length of time measured in days which the pregnant woman spends in the hospital during the perinatal period (including intrapartal length of stay) and the number of hospitalizations.

Intrapartum Events:

Type of delivery: The method of delivery as recorded on the delivery record, i.e., Normal Spontaneous Vaginal Delivery (NSVD), Caesarian Section (C-Sec.) etc.

Primary Provider at Birth: The primary health care provider who attends the woman/family during labor and birth.

Length of Labor: Duration of labor, both first stage (4-5cm to complete cervical dilation), and second stage (complete dilation to birth) in minutes.

Medication Use in Labor: Measured as a categorical variable, "yes" if

pain medication was received during labor, "no", if it was not.

Independent Variable

Alternative Prenatal Care Visit Schedule: A schedule of visits adapted from the visit schedule recommended by the USDHHS Expert Panel on Prenatal Care. Women attended approximately 8 prenatal visits for a full-term pregnancy, depending on when care is begun. An example of the visit schedule is as follows: Initial visit at approximately 6-8 weeks, followed by the next visit at 15-19 weeks of pregnancy, then a visit at 24-26 weeks of pregnancy, with subsequent visits at 32 weeks of pregnancy, 36 weeks, 38 weeks, 40 weeks, and then weekly until the birth of the baby.

Prenatal Care Evaluation

Mean number of prenatal visits: The total number of regularly scheduled visits attended by the pregnant woman during the perinatal course as recorded on the prenatal care delivery record flow sheet.

Number of unscheduled office outpatient visits: The total number of unscheduled prenatal visits for routine prenatal care, as documented in the prenatal care chart record.

Number of phone calls: The total number of patient initiated phone calls, as documented in the prenatal care chart record.

Number of "no show" visits: The total number of scheduled prenatal visits that were missed by the woman during her perinatal course, as

documented in the prenatal care chart record.

Number of Evaluation Room visits at UCIBC: The total number of unscheduled evaluation room visits for acute problems, labor evaluations etc., as documented in the participant's chart record.

Number of Emergency Room hospital visits: The total number of emergency room visits for acute problems, labor evaluations etc. at sites other than the UCI Birthing Center, as documented in the participant's chart record either by receipt of records or through self-report.

Number of patient initiated transfers of care: Information obtained by chart review on the number of patients who transferred care due to dissatisfaction or other reasons.

Extraneous Variables

Background and Personal Characteristics:

Gestational age at entry into prenatal care: As reported on the Maternal Background/Personal Characteristics (MBPC) questionnaire (Appendix E), question number 16. If unknown, then the gestational age at entry into prenatal care will calculated based on the gestational age at initial exam as recorded in the prenatal chart record.

Maternal age at delivery: As calculated from the information reported in question 1 of the MBPC questionnaire.

Years of education completed: As reported in question 8 and 9 of the

MBPC questionnaire.

Marital status: As reported in question 7 of the MBPC questionnaire.

Occupational status: As reported in question 11 of the MBPC questionnaire.

Ethnic/racial background: As reported in question 2 of the MBPC questionnaire.

Height: As reported in question 17 of the MBPC questionnaire.

Current weight: As reported in question 18 of the MBPC questionnaire.

Body Mass Index: Calculated by taking the participant's current reported weight or weight at initial prenatal visit, in kilograms and dividing that by their height in meters squared.

Interpregnancy interval: As reported in question 14 of the MBPC questionnaire.

Parity: As reported in question 12 of the MBPC questionnaire.

Gravidity: As reported in question 13 of the MBPC questionnaire.

Intervening Variables

Type of Health Insurance: As reported in question 22 of the MBPC questionnaire.

Childbirth Preparation Class Attendance: As reported in question 105 of the Patient Satisfaction with Prenatal Care instrument.

Smoking Status: As reported in question 19 of the MBPC questionnaire.

Substance Abuse: As reported in question 21 of the MBPC questionnaire.

Alcohol Use: As reported in question 20 of the MBPC questionnaire.

Social Support: Measured by the Maternal Social Support Index (Pascoe, 1988). See Appendix E.

Sense of Coherence: Measured by the Sense of Coherence instrument (Antonovsky, 1987). See Appendix E.

Mediating Variable

Self-Care: Measured by the Exercise of Self-Care Agency Scale. See Appendix E.

Chapter 5

Results

This study evaluated the effects of an alternative prenatal care visit schedule for low-risk pregnant women on selected perinatal outcomes, maternal satisfaction and anxiety. In addition, the impact of prenatal care on self-care practices was considered in relation to the dependent variables and selected demographic variables. Self-care provided the conceptual framework for the study. Appendix F contains the results tables.

A prospective, randomized study was conducted. Descriptive statistics are given for all variables for the experimental group (the alternative prenatal care visit schedule group (APCVSG), the control group (the traditional prenatal care visit schedule group (TPCVSG) and for the entire sample. Summary measures are chosen appropriate to the specific variable with means and standard deviations used for interval and ordinal level variables and frequencies and percents used for nominal level variables. Other distributional characteristics are assessed as required by hypothesis testing approaches.

Means, standard deviations and range are used to describe sense of coherence, exercise of self-care agency, maternal social support, state and trait anxiety and satisfaction with prenatal care. Cronbach's alpha was

utilized to measure the internal consistency and reliability for each instrument at each administration and in the case of the Patient Satisfaction with Prenatal Care Instrument, for each subscale. Pearson's correlations were conducted where appropriate to describe the relationships between the variables. Analysis of variance (ANOVA) and Chi-square procedures were conducted to evaluate differences in selected demographic data between women in the experimental (APCVSG) and control (TPCVSG) groups. Chi square analysis was used to determine differences between selected nominal level demographic variables and ANOVA was utilized to evaluate interval and ordinal level variables. ANOVA (general linear model) was used to test Hypotheses 1, 2, and 3A with alpha =0.01. Hypotheses 3B, 3C, and 3D were tested using Pearson's correlation coefficients, alpha=0.01.

An alpha level of 0.01 was chosen for scientific rigor due to the small sample size and the multiple statistical tests. The expected number of P values smaller than 0.05 is 1 in 20 tests of true null hypotheses; therefore, the probability that at least one P value will be smaller than 0.05 increases with the number of tests, even when the null hypothesis is correct for each test (Bailar & Mosteller, 1986). Aim 4 was explored using stepwise multiple regression procedures. Aim 5 was assessed using ANOVA and Chi-square statistical tests where appropriate. Aim 6 was evaluated using

ANOVA also. Additionally 95% confidence intervals, a measure of the variability associated with the mean of the variable, were calculated for specific outcome variables such as gestational age at birth, birthweight, average weight gain, number of prenatal visits, and incidence of antepartal and intrapartal transfer. A 95 % confidence interval indicates with 95% probability the two values within which the mean lies and may provide important information for clinical interpretation of the results.

Subject Participation

During the study period every woman (N=183) who met the eligibility criteria was invited to participate in the study upon entry into prenatal care at the UCI Birthing Center (Table 3, Appendix F). A total of 122 (67%) women agreed to participate in the study. Sixty-one (33 %) women declined to participate. Of the 122 women who agreed to participate, 37 (30%) dropped out of the study. Four women (3%) experienced pregnancy losses after signing the study consent form and being randomized into groups based on demographic information given on the Birthing Center history form, but before initial questionnaires were completed. Three of the women had first trimester spontaneous abortions and the fourth woman experienced an intrauterine fetal demise at 19 weeks gestation. All four women experiencing pregnancy losses were in the control group. Eighty-one (66%) women completed the study; 38 of these women were in

the control group (TPCVSG) and 43 women were in the experimental (APCVSG) group. Nine (11%) of the 81 women followed the assigned study visit schedule but were transferred for the remainder of their prenatal care and intrapartum care to the UCI Medical Center at the end of their pregnancies but before labor started. Ten women (13%) were transferred to UCI Medical Center while in labor. One study participant (1%) chose to go to the UCI Medical Center for intrapartal care instead of receiving care at the UCI Birthing Center during her labor and birth.

Reasons given for dropping out of the study varied (Table 4). The most common reason cited was transferring care to another medical provider (n=12, 32%) followed by personal preference (n=9, 24%), a desire/requirement for care not provided by the Birthing Center such as epidurals, VBACs, home birth, gestational diabetes, exceeding Birthing Center weight limit, or increased risk of preterm labor (n=8, 22%). Other reasons for dropping out of the study were a change in insurance type (n=3, 8%), relocation to another area (n=3, 8%,) and giving birth at another hospital in the area after receiving prenatal care at the Birthing Center (n=2, 6%).

Demographics

Demographic data for the total sample (N=81) is given in Table 5. The mean age of participants at entry into the study was 25.29 (SD=5.25)

years. Of those participants who were born outside the United States, the mean length of stay in this country was 77 months (SD=76.42). The mean number of years of schooling completed was 9.6 (SD=3.6). Mean number of weeks of pregnancy at entry into the study, was 14.4 weeks (SD=4.89). Mean number of pregnancies (gravidity) experienced by the participants (including the present pregnancy) was 2.36 (SD=1.28). The mean height was 61.86 inches (SD= 8.39), the mean reported current weight was 131.61 pounds (SD=28.20) and the mean Body Mass Index was 23.74 (SD=4.80).

Seventy-four percent (n=60) of the women were Hispanic, 22% (n=18) Caucasian, and 1.2% (n=1) Asian-American. Sixty-seven percent (n=54) of the participants were born outside of the United States. Fifty-six percent (n=45) of participants spoke Spanish, 25% (n=20) spoke English and 16% (n=13) responded that they spoke both English and Spanish. Most (n=65, 80%) participants were currently married or living together but not married, 12% (n=10) reported being single, and 4% (n=3) were divorced or separated. Six percent (n=5) of the participants reported having a bachelor's degree, 1% (n=1) had a masters and 1% (n=1) had a doctoral degree. The majority of participants reported their religious faith as being Catholic, 67% (n=54), other 14% (n=11), none 7% (n=6) and Protestant 4% (n=3). Of those participants who responded to the question on income,

most (46%, n=38) reported that their approximate household income was less than $25,000 per year. Sixteen percent (n=13) of participants reported not knowing the approximate amount of their household income. Most participants 60% (n=48) were not employed, whereas 17% (n=14) were employed part-time and only 14% (n=11) were employed full-time.

Thirty-eight percent (n=31) of participants had never experienced a live birth. Of the women who had previously had a live birth (n=37, 46%), most reported having one or two children. Most women reported that their last baby was born one to two years ago (n=22, 27%). Interestingly 15% (n=12) of participants reported that their last baby was born five or more years ago. Most participants reported that during this pregnancy they had not smoked, (n=75, 93%), had not used street drugs (n=74, 92%) or had not used alcohol, (n=64, 79%). However 17% (n=14) participants reported drinking alcohol but quit when they found out they were pregnant and 4% (n=2) reported that they had used street drugs but quit when they found out they were pregnant.

Eighty-two percent (n=66) of the participants reported their health insurance as being MediCal (Medicaid), 10% (n=8) were covered by some form of private insurance, and 3% (n=2) had no health care insurance coverage and were paying for their health care in cash.

Tables 6 and 7 contain participant's demographic data by study group.

Analysis of Variance (ANOVA) and Chi-square analysis was performed on selected demographic data (Table 8) to determine any statistically significant difference ($p < .01$) between the participants in the TPCVS group and the APCVS group. There were no significant differences found between the two groups using ANOVA on the variables of age, length of time lived in the United States, years of schooling completed, Body Mass Index, gravidity, gestational age at entry into the study/prenatal care, or using Chi-Square analysis on the variables of ethnicity, US native, language spoken, marital status, parity, street drug use, household income, religion or type of health insurance.

Participants who dropped out of the study (n=37) were compared to the total participants remaining in the study (n=81) by ANOVA and Chi-Square tests where appropriate. Table 9 contains the demographic characteristics of the participants who withdrew from the study. There were no significant differences found between the two groups (Table 10) using ANOVA procedures on the variables of age, length of time lived in the United States, years of schooling completed, Body Mass Index, gravidity, gestational age at entry into the study/prenatal care, or using Chi-Square analysis on the variables of ethnicity, US native, language spoken, marital status, parity, religion, household income, street drug use or type of health insurance.

Participants responses to study instruments at entry into study (Time 1) did not differ between groups using ANOVA statistical procedure. Results of the ANOVA comparisons are found in Table 10.

Instruments

Data for subjects having 10% or more of the responses missing on an instrument were excluded in the statistical analyses. Items were reversed in scoring where appropriate and according to the author's instructions. Results are reported here by either the mean score of the item or the mean of the sum total scores. The normative data for the individual instruments varies and is given either by sum of the total instrument score or by the mean of the individual items. Means, standard deviations and ranges obtained for all instruments are found in Table 11.

Exercise of Self-Care Agency

The Exercise of Self-Care Agency (ESCA) scale consists of 43 items rated using a five-point Likert-type scale (Gast et al., 1989). The five point scale ranges from 4= "Very Characteristic" to 0= "Very Uncharacteristic".

The ESCA scale was administered at entry into the study (Time 1) and at 36-38 weeks gestation (Time 2). Cronbach alpha coefficient at Time 1 was 0.87 and at Time 2, 0.85. Mean scores at Time 1 revealed that the majority of women in the study reported a moderately low degree of self-care agency (M=2.75, SD =0.44). At Time 2 participants also reported

a moderately low degree of self-care agency (M=2.78, SD=0.39).

Sense of Coherence

Sense of Coherence is conceptualized as an intervening variable in this study and measured by the abbreviated 13-item Sense of Coherence questionnaire (SOC) (Antonovsky, 1987). The 13-item scale uses a 5-point Likert scale ranging from 1 "not having this feeling" to 5 "always having this feeling".

In this study, Sense of Coherence was measured at Time 1 and Time 2. Cronbach alpha coefficient at Time 1 was 0.78 and at Time 2, 0.76. The mean score for the total items at Time 1 revealed that participants had a moderate sense of coherence level (M=3.58, SD=0.63). Mean scores at Time 2 also revealed a moderate sense of coherence level (M=3.57, SD=0.57) and did not reveal a significant change from Time 1.

Anxiety

Anxiety is conceptualized as one of the dependent variables and was measured by the Speilberger State/Trait Anxiety Inventory (STAI) (1969). The STAI is comprised of separate self-report scales for measuring state and trait anxiety. Both state and trait anxiety were measured at entry into the study (Time 1), with only state anxiety being measured at 36-38 weeks gestation (Time 2). The state and trait anxiety instrument has been shown to be stable over time once an initial reliability has been calculated. The

state anxiety rating scale is a Likert scale ranging from 1 "not at all" to 4 "very much so". The trait anxiety rating scale is a Likert scale ranging from 1"almost never" to 4 "almost always".

Trait Anxiety

Cronbach alpha coefficient for the Trait Anxiety instrument was 0.91. Mean sum scores for the total Trait Anxiety instrument (M=39.49, SD=10.11) revealed that scores were slightly higher than those reported (Spielberger, 1980) for working adult women 19-39 years of age (M=36.15, SD=9.53). This may indicate that women in this study have a personality trait which is slightly more anxiety prone (Spielberger, 1980).

State Anxiety

Cronbach alpha coefficient for Time 1 was 0.92 and at Time 2, 0.90 Mean scores for the total instrument revealed that at Time 1 participants reported a higher degree of state anxiety (M=38.34, SD=11.29) than working adult females in the 19-39 year age group (M=36.17, SD=10.96) (Spielberger, 1980). At Time 2, participants continued to report state anxiety levels (M=37.65, SD= 10.11) higher than the norm.

Social Support

Social support is conceptualized as an intervening variable in this study and was measured using the Maternal Social Support Index (Pascoe et al, 1988) is an 18-item self-report questionnaire. The highest score

obtainable on the MSSI is a total of 39 points.

Social support was measured at both Time 1 and Time 2. Cronbach alpha at Time 1 was 0.64 and at Time 2, 0.78. At Time 1 the majority of participants reported a low level of social support (M= 22.01, SD=5.30). Scores did not vary significantly from the Time 1 level at Time 2. In fact, at Time 2 there was a slight decrease in the mean score (M=21.28, SD=6.28).

Satisfaction with Prenatal Care

Patient satisfaction with prenatal care is conceptualized as a dependent variable in this study and measured using The Patient Satisfaction with Prenatal Care (PSPC) (Omar & Schiffman, 1992). The items are rated from 1 "strongly agree" to 6 " strongly disagree" for each of the PSPC five subscales.

On the first subscale, motivation to obtain prenatal care, Cronbach alpha coefficient was 0.26 and participants reported a moderate level of motivation (M=2.23, SD=0.78). On the second subscale, expectations about prenatal care, the Cronbach alpha coefficient was 0.73. The participants reported a moderate level of expectations (M=2.80, SD=0.48). Participants reported a high level of satisfaction with the health care provider (M=1.77, SD=0.52) on the third subscale. The Cronbach alpha coefficient for the satisfaction with provider subscale was 0.95. A slightly higher level of satisfaction with the health care staff (M=1.75, SD=0.53)

was reported on the fourth subscale, satisfaction with staff. A Cronbach alpha coefficient of 0.95 was obtained on this subscale. On the last subscale, satisfaction with the prenatal care delivery system, a Cronbach alpha coefficient of 0.72 was obtained. Participants reported a moderately high level of satisfaction (M=2.03, SD=0.48) with the prenatal care delivery system.

Hypothesis Testing

Six aims and six hypotheses were tested in the study:

Aim 1: To determine the effects of an alternative prenatal care visit schedule on selected perinatal health outcomes

Hypothesis #1: There will be no significant difference in perinatal outcomes between low risk women in the alternative prenatal visit schedule group vs. those in the traditional prenatal visit schedule group. This hypothesis was supported in that the ANOVA and Chi-square statistical procedures demonstrated no statistically significant differences ($p<0.01$) in perinatal outcomes between the women in the two study groups. Table 12 contains the perinatal outcomes for the total sample of women completing the study (n=81). Tables 13 and 14 contain the perinatal outcomes by study group. The data obtained from the ANOVA and Chi-square procedures comparing the outcomes of the two groups are contained in Table 15. Maternal and neonatal complications are found in Table 16.

Aim 2: To determine the effects of an alternative prenatal care visit schedule on selected psychological outcomes.

Hypothesis #2: There will be no significant difference in psychological outcomes between women in the alternative prenatal visit schedule group vs. those in the traditional prenatal visit schedule group. On each of the five Patient Satisfaction with Prenatal Care Instrument subscales, there was no statistically significant difference using ANOVA between the participants in the TPCVS group and the APCVS group. ANOVA analysis for the five subscales is as follows: 1) Motivation subscale: $F=0.25$, $p=0.62$, 2) Prenatal Care Expectation subscale: $F=0.64$, $p=0.80$, 3) Satisfaction with Prenatal Care Provider: $F=5.74$, $p=0.02$, 4) Satisfaction with Prenatal Care Staff: $F=2.01$, $p=0.16$, 5) Satisfaction with Prenatal Care System: $F=4.31$, $p=0.04$.

Anxiety scores were evaluated using ANOVA procedures by comparing the total score on state anxiety at Time 1($F=0.04$, $p=0.84$) and Time 2 ($F=0.25$, $p=0.62$) between groups and by analyzing the difference from Time 1 to Time 2 between groups ($F=0.69$, $p=0.41$). There was no statistically significant differences between participants on anxiety scores. Therefore, this hypothesis was supported in that there were no statistically significant differences between women in the study groups on the selected psychological variables of satisfaction and anxiety.

Aim 3: To test the relationship between the alternative prenatal care visit schedule and perinatal outcomes as mediated by self-care.

Hypothesis #3A: Women in the alternative prenatal visit schedule group will demonstrate greater self-care capabilities as compared to those in the traditional prenatal visit schedule group. This hypothesis was not supported. Time 1 scores on self-care agency were not significantly different using ANOVA procedures between groups ($F=3.68$, $p=0.06$). Women in the APCVS group did not demonstrate significantly higher self-care agency scores as compared to the TPCVS group using ANOVA at Time 2 ($F=0.78$, $p=0.38$), nor did they demonstrate a statistically significant change in self-care agency scores from Time 1 to Time 2 ($F=0.33$, $p=0.57$) using ANOVA.

Hypothesis #3B: Women with greater self-care capabilities will have significantly better perinatal outcomes as compared to those with less self-care capabilities. Pearson Correlation Coefficients demonstrated no significant correlation between higher self-care agency scores and perinatal outcomes. The correlation that approached significance was between self-care agency and gestational age of the baby at birth ($r=0.26$, $p=0.03$). This finding may indicate that women who have a higher sense of self-care agency may experience pregnancies which reach full gestation more often than women with lower levels of self-care agency.

Hypothesis #3C: Women with greater self-care capabilities will demonstrate greater satisfaction with prenatal care as compared to those with less self-care capabilities. This hypothesis was not supported. Self-care agency and satisfaction with prenatal care was not significantly correlated on any of the five sub-scales using Pearson Correlation coefficients with an alpha of 0.01. However, two correlations were noted to approach significance. The correlation between self-care agency and satisfaction with prenatal care provider approached significance ($r=-0.25$, $p=0.04$) in the negative direction and motivation to obtain prenatal care approached significance ($r=.40$, 0.02) in the positive direction. The negative indicates that women with higher self-care agency are more satisfied with their prenatal care provider. The positive correlation indicates that women who are less motivated to obtain prenatal care may have a higher level of self-care agency.

Hypothesis #3D: Women with greater self-care capabilities will demonstrate less anxiety as compared to those with less self-care capabilities. This hypothesis was supported in that a significant correlation was found between self-care agency scores and state anxiety scores at Time 2 ($r=-0.54$, $p=0.0001$). The level of self-care agency was negatively correlated with state anxiety. Participants with higher self-care agency scores experienced lower state anxiety.

Aim 4: To examine the relationship between extraneous demographic and personal background variables, selected intervening variables, the independent variable, self-care, perinatal and psychological outcomes with type of prenatal care. Using the multiple regression statistical procedure, the variables of self-care, childbirth class attendance, sense of coherence, social support, maternal age, years of schooling completed, marital status, BMI, parity, entry gestational age and health care insurance type were evaluated to determine the extent to which they might predict the gestational age of the baby at birth. Gestational age of the baby at birth was selected because it was the variable that came closest to approaching statistical significance when comparing perinatal outcomes by group and in the correlation with self-care agency. There were no statistically significant correlations found ($F=1.012$, $p=0.47$) for the overall model utilizing this procedure. The variable which came closest to predicting gestational age was the gestational age at which women began their prenatal care ($F=3.18$, $p=0.085$). Participants who began prenatal care at an earlier gestational age of pregnancy were more likely to have a baby with a higher gestational age at birth.

Aim 5: To determine if there is a difference between women in the alternative prenatal care visit schedule group and women in the traditional prenatal care visit schedule group as determined by number of

unscheduled appointments, number of evaluation room visits, number of no-show prenatal appointments, number of telephone calls, number of emergency room visits, and number of patient initiated transfers of care. Data obtained for the entire sample are contained in Table 17. Data on prenatal care for by study group are found in Tables 18 and 19. An ANOVA was performed to evaluate Aim 5. Results of the analysis are contained in Table 20. No statistically significant difference was found between groups on the number of unscheduled appointments, number of appointments missed, number of telephone calls, number of evaluation room visits, number of "no-show" appointments, number of emergency room visits or number of patient initiated transfers of care. There was a statistically significant difference between the number of scheduled prenatal visits attended before birth between the two groups ($F=50.78$, $p=0.0001$) which indicates that women in the APCVS group attended fewer regularly scheduled visits than women in the TPCVS group.

An additional analysis was performed on prenatal care contacts. Results of this analysis can also be found in Table 20. Women who did not make any telephone calls or evaluation room visits, had not missed any appointments or made any drop-in appointments were eliminated from each analysis and just those who had made the specific contact were included. A Chi-Square analysis was performed on each of the variables.

There were no statistically significant findings between the two study groups on the above variables.

Aim 6: To conduct a cost-effectiveness analysis between women in the alternative prenatal visit schedule group and women in the traditional prenatal care visit schedule group. Data were collected for this analysis from the University of California, Irvine Medical Center Finance Office. Charges provided by the UCI Finance Office consisted of individual participants' total charges for prenatal, intrapartum, postpartum and newborn care. An ANOVA procedure was conducted to determine whether there was a statistically significant difference between the women in the study groups by charges incurred. There were no statistically significant differences between the two groups on charges ($F=0.02$, $p=0.88$).

Further analysis of the charge data led to serious questions regarding the validity of the data. The findings reported here are tentative and further investigation is warranted before statistical conclusions can be drawn with any confidence.

In summary, participants reported having a moderate level of self-care agency, and sense of coherence. Anxiety scores on both state and trait scales were slightly higher than the normative data given by Spielberger (1980). Participants reported low levels of social support. Participants

also reported moderate levels of expectations of prenatal care and motivation to obtain prenatal care, however satisfaction with prenatal care providers and staff was high and satisfaction with the prenatal care system was moderately high.

Hypotheses 1, 2 and 3d were supported in this study. Participants were found to experience no difference in perinatal outcomes, satisfaction with prenatal care or anxiety between the experimental (APCVSG) and the control group (TPCVSG). Hypotheses 3a, 3b, and 3c were not supported. No change in self-care agency from Time 1 to Time 2 was demonstrated within groups or between groups. However, a significant correlation was found between self-care agency and state anxiety at Time 2 (Hypothesis 3d). Women with higher self-care agency exhibited less state anxiety at the end of their pregnancies.

Chapter 6

Discussion

Providing accessible, appropriate, and affordable prenatal care is a national problem which demands scientific attention. Prospective, randomized research which focuses on the appropriate timing and frequency of prenatal care visits for low-risk women is virtually nonexistent. Enlarging the prenatal care knowledge base provides a basis for the development of a conceptual model for prenatal care delivery for low-risk pregnant women. Additionally, finding answers to this problem might help to predict which women will change risk status during pregnancy and for what reasons.

Study Findings

This study is one of a small number of investigations that evaluates a prenatal care delivery model using a prospective and randomized research design. The use of randomization and the prospective approach add to the strength of the study by controlling for biases inherent in other approaches. The computer randomization program (Conlon & Anderson, 1990) randomly assigned participants into a study group while allowing for stratification to improve assignment balance. Findings revealed that there were no significant differences in demographic data between the participants in the two study groups using the ANOVA or Chi-Square

analysis of selected demographic variables. This result was to be expected due to the computerized randomization (Conlon & Anderson, 1990) program utilized in the study.

The major findings of this study revealed there to be no significant differences on selected perinatal outcomes, satisfaction with prenatal care or anxiety between the women following the alternative prenatal care visit schedule and those following the traditional prenatal care visit schedule. Perinatal outcomes analyzed by ANOVA and Chi-Square statistical procedures included infant gestational age and Ballard score at birth, birthweight, number of days spent in the NICU or Newborn Nursery immediately after birth, average weekly maternal weight gain, number of maternal hospital days, length of active labor, length of second stage labor, incidence of antepartum or intrapartum transfer to the tertiary care medical center, type of birth, primary provider at birth, and use of medication in labor.

Psychological outcomes of satisfaction prenatal care and anxiety were analyzed using ANOVA procedures and demonstrated no significant differences between the two study groups ($p<0.01$).

Although there were no statistically significant differences in satisfaction with prenatal care between the women in the two prenatal visit schedule groups, the results for two subscales approached statistical

significance. On both of the subscales, the satisfaction with provider subscale ($F=5.74$, $p=0.02$) and the satisfaction with the prenatal care system ($F=2.01$, $p=0.04$). women in the APCVS group reported higher levels of satisfaction than the women in the TPCVS group.

Findings revealed that there were no statistically significant differences in trait or state anxiety scores of participants using the ANOVA statistical procedure ($p<0.01$). However, mean scores for this sample were observed to be slightly higher than the reported norms for adult women 19-39 years of age on each measurement (Spielberger et al., 1980).

Women in the alternative prenatal visit schedule group did not demonstrate greater self-care capabilities as compared to those in the traditional prenatal visit schedule group. Findings revealed that there were no statistically significant differences between the two study groups on self-care agency scores at Time 1, Time 2 or the change from Time 1 to Time 2 using ANOVA statistical procedures.

Women with greater self-care capabilities demonstrated a statistically significant difference in state anxiety as compared to those with less self-care capabilities ($r=-0.54$, $p=0.001$). The level of exercise of self-care agency was negatively correlated with state anxiety indicating that participants with higher self-care agency scores experienced lower state anxiety at the end of their pregnancies.

Women with greater self-care capabilities were not found to have significantly better perinatal outcomes as compared to those with less self-care capabilities. ANOVA statistical procedures demonstrated no significant differences in perinatal outcomes between women with higher self-care agency scores and those with lower scores. The perinatal outcome that came closest to being significantly correlated with self-care agency was gestational age of the baby at birth ($r=0.26$, $p=0.03$). This finding suggests that women with higher self-care agency scores tended to have babies born at a later gestational age. This interpretation warrants further investigation through studies using larger, more diverse samples.

Women with greater self-care capabilities were not found to demonstrate greater satisfaction with prenatal care as compared to those with less self-care capabilities. Self-care agency and satisfaction with prenatal care were not significantly correlated on any of the five satisfaction sub-scales using Pearson Correlation coefficients with an alpha of 0.01. However, two correlations approached statistical significance, self-care agency was found to be negatively correlated with satisfaction with prenatal care provider ($r=-0.25$, $p=0.04$) and positively correlated with motivation to obtain prenatal care ($r=.40$, 0.02). Participants who had higher self-care agency scores tended to be more satisfied with their prenatal care providers and participants with higher

self-care agency scores tended to be less motivated to obtain prenatal care.

There were no differences on ANOVA between women in the two study groups based on charges incurred during perinatal care. Women who receive care at the Birthing Center are predominantly funded by MediCal which pays a global fee for prenatal, intrapartal, postpartal and neonatal care to the Birthing Center. This may account for the lack of a statistically significant difference in charges when there was a statistically significant difference in number of visits attended and no difference in perinatal outcomes, rates of transfer or other prenatal care costs and contacts.

Interpretation of Findings

Participants in this study were screened at initiation of prenatal care for low-risk status and continuously screened throughout their pregnancy for a change in risk status. Interpretation of these study findings must take into consideration the low-risk obstetrical/medical status of the participants.

Women in this study received care from certified nurse-midwives throughout their pregnancy, labor, birth and postpartum/neonatal period at the Birthing Center. Studies on the effectiveness of nurse-midwifery care suggest that nurse-midwives are important to low-birthweight and premature birth prevention (Sakala, 1993; McLaughlin, et al., 1992; Cavaro, et al., 1991; Heins, et al., 1990; Knoll, 1990; Keleher & Mann,

1986; IOM, 1985; Brucker & Muellner, 1985; Scupholme, 1982; Sharp & Lewis, 1984; Slome, et al, 1976). These predominantly, retrospective, descriptive studies indicate favorable outcomes in infant birth weight, gestational age, Apgar scores, and perinatal mortality for patients managed by nurse-midwives. The US Office of Technology Assessment (1986) concluded that certified nurse-midwives can manage normal pregnancies safely and can manage them as well as, if not better than physicians. Although the emphasis of nurse-midwifery practice has been on the care of essentially normal women and infants, certified nurse midwives have also demonstrated effectiveness in managing the care of socioeconomically high-risk women (Piechnick & Corbett, 1985). Several reasons for these positive outcomes have been proposed: 1) nurse-midwives have been shown to be particularly effective in managing the care of pregnant women who are at high risk because of social and economic factors due to the emphasis on education, support and patient satisfaction (IOM, 1985), 2) the increased length of time spent with patients in their prenatal visits compared to physician providers (Lehrman, 1981; National Center for Health Statistics, 1980) and that nurse-midwifery patients may be more compliant with visit and treatment recommendations (Slome, 1976). In a recent study, (Baldwin et al., 1994) nurse-midwives were found to adhere to recommended clinical practice guidelines more closely than other

providers (OB/GYN physicians and Family Practice physicians) and recorded a standard of practice that most closely matched that recommended by ACOG. Interpretation of the current study finding must also take into consideration the fact that prenatal care was provided by certified nurse-midwives and the implications just cited.

Early initiation of prenatal care is thought to be especially important for low-income women at higher risk for poor pregnancy outcomes (Institute of Medicine, 1985; Merkatz et al., 1990; USDHHS, 1989) even though study findings have been conflicting. One study has demonstrated benefits from prenatal care after 30 weeks gestation, but not from early prenatal care (Tyson, et al., 1990). By the American College of Obstetrician and Gynecologists' (ACOG) standards, initiation of prenatal care at 14 weeks is considered "delayed" care (ACOG, 1989) and is proposed to negatively influence perinatal outcomes.

Participants in both study groups enrolled in prenatal care in the second trimester of pregnancy ($\underline{M}$=14.4, SD=4.89) and did not demonstrate a high incidence of adverse perinatal outcomes. The sample was composed of women who were low-risk obstetrically and medically, predominantly low-income, Hispanic and using Medicaid as their health insurance. Consistent with the findings of this study, Enderlein, Stephenson, Holt, & Hickok (1994) reported that women who are healthy and without a history

of medical/obstetrical complications are more likely to delay seeking prenatal care.

Another factor which may influence delayed initiation of prenatal care may be length of time waiting for Medicaid confirmation. However, one recent study showed that Hispanic women delayed initiation of prenatal care regardless of early enrollment in Medicaid, with 78% of the Hispanic women enrolled in Medicaid by the first trimester and yet only 51% initiated care in the first trimester (Moore & Hepworth, 1994). In the current, study women reported applying for Medicaid at a mean of 9 weeks gestation, but initiation of prenatal care occurred at a mean of 14.4 weeks. The delay in initiation of care may only be partially attributed to waiting for a prenatal appointment because at most the wait for a first prenatal appointment was 1-2 weeks during the study period.

Overall, this study's findings are consistent with the previously mentioned studies in demonstrating that although Hispanic women delay prenatal care they experience a low incidence of adverse pregnancy outcomes and low birthweight babies. With the paucity of sound scientific evidence to support the current visit schedule and recommendations of early initiation of prenatal care, conflicting study findings, and the growing body of evidence that certain groups of women may initiate prenatal care later without adverse consequence, re-examination of the current visit

schedule recommendations should be considered.

In interpreting the findings of this study it is important to consider that women in both prenatal visit schedule groups attended fewer visits than the 13 visits that ACOG (1989) standards state is "sufficient" prenatal care for a full term pregnancy. Women in the experimental group attended a mean of 7.6 visits, which ACOG standards consider "insufficient" prenatal care for women having a full-term pregnancy . Women in the control group attended a mean of 10.8 visits which is below the ACOG standard (1989) of 13 visits. Using the Kessner (1973) or GINDEX (Alexander, et al, 1987) index of prenatal care, the women in both study groups received an intermediate level of prenatal care. Previous retrospective studies have reported increased perinatal morbidity when women attend less than "sufficient" or "adequate" prenatal care (Moore et al., 1986; Tyson et al., 1990; Showstack, Budetti & Minkler, 1984; Hulsey, Patrick, Alexander, & Ebeling, 1991). Data from these studies were collected retrospectively from birth certificates (Showstack et al., 1984), and from medical records review at major university medical centers (Hulsey et al., 1991; Moore et al., 1986; Tyson et al., 1990). Participants in these studies were predominantly low-risk medically and obstetrically, using a variety of health care insurance types, and from varied ethnic backgrounds. Findings from the current study indicate that it may be possible for low-risk women to

attend fewer visits than stated in the literature as being adequate or "sufficient" and still experience healthy perinatal outcomes.

The majority of participants in the study (n=54, 67%) were foreign born, were Hispanic, and predominantly from Mexico. Data suggest that maternal birth in Mexico is a marker for the persistence of Hispanic cultural orientation. Limited data are available but findings from a few studies (Collins & Shay, 1994; Guendelman, et al, 1990; Scribner & Dwyer, 1989) suggest that factors associated with a Hispanic cultural orientation may be beneficial to pregnancy outcomes. Hispanic women born in the United States had a 60% greater risk for low birth weight than foreign born Hispanics (Guendelman et al, 1990). The results of one study (Ventura & Taffel,1985) indicate that the incidence of low birthweight is lower in Mexican infants of foreign born rather than to US-born mothers regardless of age, marital status, education and trimester of prenatal care initiation. Why this occurs is not clear but is thought to be due to the protective effects of acculturation and the poor health habits acquired by Hispanic women in the US (Collins & Shay, 1994). The authors felt that one factor contributing to this protective effect may be that foreign born Hispanic women had better self-care practices, such as not drinking alcohol, smoking or using illicit drugs. The implications for this study are that it is possible that the large number of study participants who were foreign born

may have contributed to the fact that no low birthweight baby (<2500 gm) was born to any of the women in this study independent of the visit schedule followed.

The findings of this study were consistent with the study conducted by Binstock, Thompson, and Wolde-Tsadik (1992) which prospectively compared two groups of women (n=401), one attending prenatal care using an abbreviated visit schedule and the other following the traditional prenatal visit schedule (ACOG, 1989). Their findings revealed no difference in perinatal outcomes and a trend toward women in the abbreviated prenatal visit group being more satisfied with the prenatal care received. Women in both study groups (Binstock et al, 1992) received more visits (8.2 and 11.3) than the women in this study (7.6 and 10.8). This may be attributed to the earlier gestational age at which the women in the Binstock et al. (1992) study began prenatal care, approximately 11 weeks gestation. In comparison, the women in the current study initiated prenatal care almost a full month later than the women in the Binstock et al. study (1992).

Almost two-thirds (n=50, 62%) of the women in this study participated in the Comprehensive Perinatal Services Program (CPSP) at the Birthing Center, which provides education, nutrition counseling and social services, sponsored by the state of California. The perinatal outcomes in this study

may also have been influenced by this factor. However, all women participants had an equal chance of participating in the CPSP program and there was no statistically significant difference between the number of women in the two groups who participated in CPSP (X^2=.50, p=.48). Women participating in the CPSP program have been shown to have lower rates of preterm delivery than women who received no prenatal care or registered late for prenatal care (Moore, Origel, Key, & Resnick, 1986).

There are few studies that have examined prenatal care and self-care practices. Patterson, Freese, & Goldenberg, (1990) found in their grounded theory study that women who perceived themselves to be experiencing a healthy pregnancy delayed seeking prenatal care but reported taking care of themselves by modifying their diet, life-style, rest and exercise. Self-care was demonstrated to be engaged in by women who came for care early, late or not at all (Patterson, et al, 1990).

Women with greater self-care capabilities were not found to demonstrate greater satisfaction with prenatal care as compared to those with less self-care capabilities, in this study but a correlation was demonstrated between women with higher levels of exercise of self-care agency and increased satisfaction with the prenatal care provider and also between women with high levels of exercise of self-care agency and lower motivation to obtain prenatal care. The correlation between motivation and

self-care agency is a curious finding and must be interpreted cautiously, especially in light of the low Cronbach alpha (0.26) of the motivation subscale. This finding would indicate that women who are less motivated may have a higher level of exercise of self-care agency. A finding that would seem to contradict previous findings (Kearney & Fleischer, 1979) of characteristics of individuals who exercise a high degree of self-care agency. Individuals who exhibit a high level of exercise of self-care agency describe themselves as assertive, self-controlled, confident, responsible, helpful, and adaptable (Kearney & Fleischer, 1979). A more consistent finding would be that highly motivated women have higher exercise of self-care agency scores.

Normative data for the Exercise of Self-Care Agency instrument on nursing students (n=79) revealed a mean total score of 122.72 (SD=13.75) and a range of 90-154. For this study sample, the mean total score was lower than the normative data. Little work has been done thus far which empirically examines the exercise of self-care agency concept with prenatal women. Therefore scores obtained in this sample must be interpreted with caution and consideration must be given to the differences between demographics of this sample and the standardization sample.

Limitations

Limitations of this study include the small size and homogeneous nature of the sample, threats to the internal validity of the study related to the self-care protocol not being fully implemented, and possible self-selection bias. Aditionally the prinicpal investigator collected data from the participant's charts after delivery and was not blinded, nor able to be blinded, to which study group the participants were in. Women selecting to receive their care in a free-standing birthing center setting and agreeing to participate in this study may differ from the general population of pregnant women.

In studies where non-significance is a significant finding the risk of not rejecting the null hypothesis when it is false (type II error) is greater with smaller sample sizes. By increasing the sample size the power of the statistical test is increased and there is less chance of type II errors (Woods & Catanzaro, 1988). A statistical power analysis using a power of .80 and an alpha of .05 suggested that the sample size for each group be composed of a minimum of 37 participants in order to detect a large effect of approximately .80. By decreasing the alpha level to .01 the risk of a type I error (believing an alternative treatment is better than the standard when it is not) was reduced to 1 of 100 samples when comparing group means and lending additional strength to the interpretation of the study findings.

Minimizing the probability of both a type I and type II error is difficult. By decreasing the alpha level the probability of a type I error decreases but the probability of a type II error increases. Therefore the alpha level of .01 was chosen for this study as acceptable in decreasing the chances of both a type I and type II error.

An additional threat to the internal validity of the study is that women in the study groups may have been treated differently by the prenatal care providers due to their knowledge of the group to which the participants belonged. Measures taken to reduce this threat were: 1) standardization of prenatal visit lengths for both groups, 2) development of a list of uniform educational content to be covered by trimester for both groups, and 3) standardized clinical practice guidelines for prenatal care for both study groups.

The self-care study protocols required additional effort on behalf of the prenatal care providers and staff to enhance the self-care skills of the women in the experimental group. Women in the experimental study group were instructed upon recruitment into the study, to measure their own weight and check their own urine for glucose and protein at each prenatal office visit as well as given the self-care diary with instructions on its use. The women were instructed to return the diary after the birth of their baby to a member of the research team. Health care providers and staff were

also instructed to ask the participants in the alternative group at each visit whether they was using the diary and encourage them to bring it to prenatal care visits. The office staff and prenatal care providers were instructed to assist and encourage the participants to perform these activities at prenatal care visits and to bring their diary with them to each visit.

Few (n=3) of the women in the experimental study group returned the completed diary after the birth of their babies. Upon questioning, many of the women in the experimental group reported not using the diary, using it sporadically or having misplaced it. Very few brought the diary with them to their visits. Women in the experimental group did not comply well with this aspect of the study. Several factors may have contributed to this such as the detailed daily nature of the diary which may be difficult for busy women to maintain and the lack of reinforcement from the staff and providers.

From observations of the office staff and participants in the experimental group during office visits, the self-care clinic activities, checking their own urine and obtaining their own weight, were not carried out by the women, but were performed by the office staff just as they were for the women in the control group. After frequent reminders to both the participants and staff and prompting from the principal investigator, this behavior did not

change. Office staff expressed difficulty in remembering to treat the women in the two study groups differently even though the charts were clearly marked with color coded information sheets stapled to the prenatal care flow-sheet which was the first page seen when opening the chart. These color coded sheets contained instructions on assisting the women in the experimental group to test their own urine and weigh themselves, as well as which visit schedule to follow. However, due to the busy office environment and a lack of assistance from the office staff, these self-care enhancement activities were not well executed within the study framework.

Another limitation of this study was that the participants were similar with regard to demographic data. Since the majority of the subjects were Hispanic, foreign born , from lower socioeconomic groups, predominantly Medicaid recipients, and with a low education level , the results cannot be generalized beyond conditions that existed in this study.

Participants of this study were women who selected to receive care in a free-standing birthing center setting. Previous study findings report that the majority of women who select to receive their care at a free-standing birthing center are white, married, well educated, older, start prenatal care within the first trimester, are having their second or subsequent child and less likely than their counterparts in the general population to smoke, or drink alcohol (Rook, et al., 1989). Demographically the women in this

study differed from previously reported recipients of birthing center care and were not the "typical free-standing birthing center" patients. The reasons for this may be that the free-standing birthing center in this study was a referral source for a tertiary care university hospital, was funded by a state grant designated for providing care for women whose funding source was primarily MediCal and is located in an area of the country where the predominant ethnic group is swiftly becoming Hispanic in origin and is situated in a low-income geographic location.

In this study as in any study, the possibility of a Hawthorne effect exists. Participation in the study may have influenced the prenatal visit attendance by women in the study groups. In addition, a Hawthorne effect may exist in relation to the prenatal care providers. Decisions regarding care may have been influenced by the fact that the providers knew that they were participating in a study.

While the prospective, randomized methodology of the study eliminated many of the biases inherent in retrospective studies, due to the nature of clinical research elimination of all potential confounding biases and threats could not be attained. Threats to internal validity such as the self-care activities not being implemented as designed could not be achieved and are acknowledged here as limitations of the study.

Implications for Nursing

The findings of this study have several implications for nurses involved in prenatal care delivery. In increasing numbers, advanced practice nurses are delivering prenatal care to low and even moderate-risk pregnant women. Empowering women toward greater self-care skills may enhance not only their own health but lessen their anxiety at the end of pregnancy. An association between higher levels of exercise of self-care agency and lower levels of anxiety at the end of pregnancy was demonstrated in this study. Prenatal care providers may lessen maternal anxiety toward the end of pregnancy by assisting women in self-care skills. Specific interventions toward enhancing these skills may be developed through subsequent studies and focus groups.

There was a trend toward an increased level of satisfaction with both provider and the prenatal care system by women in the experimental group. Finding cost-effective, appropriate satisfying and efficient methods of delivering prenatal care is as important today as it has ever been. There is a nationwide trend toward managed care arrangements for Medicaid as well as other insurance types. With the contribution of this study to the growing body of evidence that fewer prenatal visits may be appropriate for low-risk women, it is time to re-examine the recommended prenatal visit schedule in this country. Further work needs to be done to examine the

costs incurred in prenatal care and how they relate to perinatal outcomes. Programs of comprehensive prenatal care combined with patient education may be highly cost effective for prevention of poor perinatal coutcomes.

In the search for cost-effective, appropriate, efficient prenatal care delivery, nurses are certainly key. Nurses are in a prime position to advocate for appropriate prenatal care for low-risk pregnant women and to be instrumental in developing prenatal care policy in this country. For many years, prenatal care has been provided by community health nurses, nurse practitioners, nurse-midwives and nurses who have a long history of being advocates for women and children and are well prepared to address this issue.

For low risk women, studying prenatal care is in essence studying the woman's response to a healthy life event, pregnancy. Pregnancy is one example of an alteration in health and prenatal care is provided to support the client's adaptation to this alteration. Therefore, research related to pregnancy and prenatal care is congruent with nursing's definition of itself.

Clinically this study helps guide nursing practice. The data obtained from this study may potentially lead to a change in the way prenatal care is delivered. This study has contributed not only to the understanding of prenatal care delivery but to other psychological and social factors which may impact perinatal outcomes. With this better understanding, nurses will

be able to further identify needs, goals and develop plans to personalize prenatal interventions for low-risk women. The data suggest that low-risk women should not be imposed upon to follow the same visit schedule needed by women with obstetrical and medical complications if another visit schedule is better suited to their needs and healthy perinatal outcomes can be obtained. Nursing interventions for low-risk women prenatally should include an emphasis on enhancement of self-care skills, education for childbirth, parenting and medical complications as well as risk evaluation.

The findings of this study help to increase the knowledge base regarding the timing and frequency of prenatal care delivery. The long term significance of this study will be to aid health care professionals and policy makers in increasing the accessibility of prenatal care to all women and to establish policies which will make the best use of available resources for prenatal care delivery. Additionally knowledge will be gained related to the psychological and social impact of pregnancy and prenatal care.

Future Research Directions

The population addressed by this study consisted of low-risk women attending prenatal care and giving birth at a free-standing birthing center. The women were predominantly Hispanic, lower income, using Medicaid as their health insurance and with a low level of education. The findings of this

study strengthens the case for further prospective research on prenatal care visit schedules for women without obstetrical or medical complications.

The most obvious direction for future research in the evaluation of the alternative prenatal visit schedule is to expand the study sample to larger, more diverse populations of low-risk pregnant women. Additionally subsequent research may apply this model of prenatal care delivery to women in rural areas where access to prenatal care is limited but greatly needed.

Some of the threats to internal validity experienced in this study could be controlled by having a larger research team. Funding to support such a team would be vital to the success of future work done in this area. More team members would ensure being able to meet with women at each prenatal visit in order to reinforce diary use, and monitor the staff in assisting women to perform the self-care clinic activities. Additionally more frequent meetings with the staff and providers to reinforce study protocols, answer questions, and provide feedback on the study process may be helpful in future research.

Pilot testing of the self-care diary may be vital to its future success in other studies. Focus groups to obtain feedback from the women themselves as to what they feel would be important and useful to include in

future versions of the diary may be necessary if the diary is to be used successfully in future studies. Future research may also focus on the content of prenatal care for low-risk women and on identifying specific aspects of provider or system satisfaction experienced by pregnant women.

In summary, participants who followed the alternative prenatal care visit schedule experienced no difference in the selected perinatal or psychological outcomes as compared to those following the traditional (ACOG, 1989) prenatal care visit schedule. Although there were no statistically significant differences in satisfaction with prenatal care, two subscales approached statistical significance. On both of these subscales, satisfaction with provider and satisfaction with the prenatal care system women in the alternative group reported higher levels of satisfaction than women in the traditional group. Mean scores for state and trait anxiety, though not statistically significant were higher than the published norms for the instrument for participants in both groups. Women in the alternative group did not demonstrate greater self-care capabilities than those in the traditional group but findings revealed that there was a negative correlation between self-care agency scores and anxiety. Participants with higher self-care scores experienced lower state anxiety at the end of their pregnancies. Future research is implicated based on the findings of this study which contributed to the knowledge base of prenatal care delivery.

APPENDIX A

PRENATAL SCREENING CHECKLIST
UCI BIRTHING CENTER

PURPOSE: The Prenatal Screening Checklist will be used for the purpose of identifying low risk pregnancies which qualify for prenatal care and delivery at the UCI Birthing Center.

	YES	NO
1. Is the patient > 32 weeks today?	___	___
2. Does the patient have any of the following medical problems?		
a. Diabetes	___	___
b. High Blood pressure	___	___
c. Heart problems	___	___
d. Seizures	___	___
e. Lupus	___	___
f. Asthma, requiring medication	___	___
g. Chronic infection (hepatitis, TB, HIV+) If yes, what kind _____	___	___
3. Has the patient ever had a stillborn?	___	___
4. Has the patient ever had a baby that weighed less than 5 pounds?	___	___
5. Has the patient been hospitalized during this pregnancy? Why?	___	___
6. Is the patient's prepregnancy weight over 250 pounds?	___	___
7. Has the patient ever had a C-section?	___	___
8. Has the patient ever had any babies with birth defects?	___	___

APPENDIX B

UNIVERSITY OF CALIFORNIA, IRVINE

OFFICE OF CONTRACT AND GRANT ADMINISTRATION
(714) 856-7108 FAX (714) 725-2094

IRVINE, CALIFORNIA 92717

May 5, 1994

Deborah S. Walker, Obstetrics and Gynecology

RE: HS# 93*140
Evaluation of an Alternative Prenatal Care Visit Schedule for Low-Risk Pregnant Women.

The research project referenced above has been approved by the Human Subjects Review Committee (HSRC). Any stipulations of approval imposed by the Committee are recorded below.

Approval of the Human Subjects Review Committee does not, in and of itself, constitute approval for implementation of this project. Other levels of review and approval may be required (e.g. EH&S, Radiation Safety, School Dean). Studies undertaken in conjunction with outside entities, such as drug or device companies, are typically contractual in nature and require an agreement between the University and the company. These agreements must be executed by an *institutional official* in the UCI Office of Contract and Grant Administration. The University is not obligated to legally defend and indemnify an employee who individually enters into these agreements and investigators are personally liable for contracts that they sign. *Accordingly, the project should not begin until all required approvals have been obtained.*

No changes are to be made to either the approved protocol nor the approved, stamped consent form* without the prior review and approval of the HSRC. The enclosed consent form with the UCI approval stamp must be used for all human subjects entered into this study. In accordance with U.S. Food and Drug Administration regulations and UCI policy, all unanticipated or untoward adverse effects must be reported to the HSRC (via Human Research Administration) within two working days of occurrence.

Unless this research is "exempt," approximately 60 days prior to expiration of this approval, the principal investigator of record should receive an "Application Form for Continuing Review" which must be submitted for HSRC review and approval *prior* to the expiration date noted below. It is the principal investigator's responsibility to assure current approval of his/her projects; therefore, Human Research Administration [redacted] should be notified if the Application Form for Continuing Review is not received.

[redacted]
Chair, Human Subjects Review Committee

Approval Period: 5/5/94 to 5/31/95

UCI has a Multiple Project Assurance
M-1305, Approved: 2/1/93

____Expedited Review X Full Board Review ____*Use of consent form waived

***NOTE:** APPROVAL FOR BIOMEDICAL RESEARCH EXTENDS TO ITS PERFORMANCE AT UNIVERSITY OF CALIFORNIA IRVINE FACILITIES ONLY.*

Rev. 7/93

UNIVERSITY OF CALIFORNIA, IRVINE

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO • SANTA BARBARA • SANTA CRUZ

OFFICE OF THE VICE CHANCELLOR FOR RESEARCH
DEAN OF GRADUATE STUDIES

IRVINE, CALIFORNIA 92717

April 5, 1993

Deborah S. Walker, Obstetrics and Gynecology

RE: HSM# 93-140
Evaluation of an Alternative Prenatal Care Visit Schedule for Low-Risk Pregnant Women.

The research project referenced above has been approved by the Human Subjects Review Committee (HSRC). Any stipulations of approval imposed by the Committee are recorded below.

Approval of the Human Subjects Review Committee does not, in and of itself, constitute approval for implementation of this project. Other levels of review and approval may be required (e.g. EH&S, Radiation Safety, School Dean). Studies undertaken in conjunction with outside entities, such as drug or device companies, are typically contractual in nature and require an agreement between the University and the company. These agreements must be executed by an ***institutional official*** in the UCI Office of Contract and Grant Administration. The University is not obligated to legally defend and indemnify an employee who individually enters into these agreements and investigators are personally liable for contracts that they sign. *Accordingly, the project should not begin until all required approvals have been obtained.*

No changes are to be made to either the approved protocol nor the approved, stamped consent form without the prior review and approval of the HSRC. The enclosed consent form with the UCI approval stamp must be used for all human subjects entered into this study. In accordance with U.S. Food and Drug Administration regulations and UCI policy, all unanticipated or untoward adverse effects must be reported to the HSRC (via Human Research Administration) within two working days of occurrence.

Unless this research is "exempt," approximately 60 days prior to expiration of this approval, the principal investigator of record should receive an "Application Form for Continuing Review" which must be submitted for HSRC review and approval *prior* to the expiration date noted below. It is the principal investigator's responsibility to assure current approval of his/her projects; therefore, Human Research Administration ([redacted] should be notified if the Application Form for Continuing Review is not received.

[redacted]
Chair, Human Subjects Review Committee

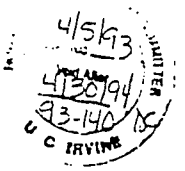
Approval Period: 4/5/93 to 4/30/94

UCI has an approved Multiple Project
Assurance: # M-1305

____Expedited Review ___✓Full Board Review

THIS APPROVAL EXTENDS TO RESEARCH PERFORMED AT UNIVERSITY OF CALIFORNIA IRVINE FACILITIES ONLY.

Rev 11/92



UNIVERSITY OF CALIFORNIA,
Irvine, California and Los Angeles, California

CONSENT TO ACT AS A HUMAN RESEARCH SUBJECT

EVALUATION OF AN ALTERNATIVE PRENATAL CARE VISIT SCHEDULE
FOR
LOW-RISK PREGNANT WOMEN

1. I give my permission to Deborah Walker, RNP, CNM, MS, a doctoral student in the School of Nursing at the University of California, Los Angeles, to include me in a research study that is designed to evaluate the effects of two different prenatal care visit schedules on my pregnancy, baby and type of birth. I understand that I will be part of the study for the length of my pregnancy, and there will be two groups involved in this project: an intervention group with members who take part in the alternative prenatal care visit schedule; and a comparison group with members who follow the traditional prenatal care visit schedule, both described in Number 3 below.

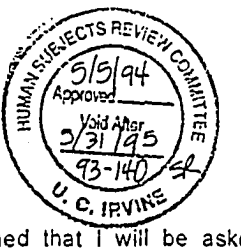
2. It has been explained to me that the reason for my being asked to participate in this study is because I am 18 years of age or older, experiencing a normal, healthy pregnancy without medical or obstetrical complications, have started my care before 26 weeks of pregnancy, speak English or Spanish, and am planning to receive health care during my pregnancy, labor and birth at the UCI Birthing Center.

3. I understand that if I agree to participate in this study I will be assigned by chance to receive prenatal care according to either the traditional visit schedule or the alternative visit schedule. If I am in the alternative prenatal care group, I understand that I will have about 8 prenatal visits; one initial visit, then at 16 weeks, 24-28 weeks, 32 weeks 36 weeks 38 weeks, 40 weeks and then weekly until I give birth. If I am in the traditional prenatal care group I understand that I will receive about 14 visits; one initial visit, then one visit every four weeks until 28-32 weeks, every two weeks until 36 weeks and then weekly until I give birth.

4. I understand that I am to follow the visit schedule to which I am assigned and that I will be given a copy of that schedule. I understand that if I have any problems or questions that I can contact the nurse-midwife at the Birthing Center night or day for consultation regardless of which group I am in. I understand that I will discuss with the nurse-midwife at each visit the timing of the next visit and that if problems develop with my health or my baby's I may need to be seen more frequently. I understand that whichever group I am in I will receive the same high quality prenatal care.

5/5/94

5/3/95
93-140



5. I have been informed that I will be asked to complete the following written materials which will require from 30 minutes to 1 hour of my time at the beginning of my prenatal care and at 36 weeks of my pregnancy:

   a. A background questionnaire about myself, my family, my personal habits, and my pregnancy--given at the beginning of my prenatal care.

   b. Two questionnaires on how I take care of my health and how I feel about the help I am receiving from others-given at the beginning of my prenatal care and at 36 weeks of pregnancy.

   c. One questionnaire on how satisfied I am with my prenatal care--given at 36 weeks of my pregnancy.

6. I have also been told that my Birthing Center medical records will be reviewed by the research team so they can learn about my pregnancy, birth experience and my baby's health.

7. I understand that the possible benefits of this study are that I may begin to better understand my own pregnancy, health, and how to care for myself and my baby. I understand that by participating in this study there will be benefit for others by providing new information that may help health care providers care for pregnant women and babies in the future.

8. I understand that I will receive high quality prenatal care whichever group I am in and that there are no known harmful effects to my baby or me resulting from involvement in this study; however, if I am in the group that is not seen as frequently during my pregnancy for care, there is a possibility that if I develop a problem that it will not be discovered as quickly. I understand that if I am in the alternative prenatal care group, I will be taught self-care practices which means being aware of my health and my baby and taking good care of myself during the pregnancy. I understand that I am to be aware of my health and that of my baby and if I have any problems or questions at any time of the day or night, a nurse-midwife is available for consultation on the phone or in person. I understand that there is a nurse-midwife at the Birthing Center 24 hours a day and that I can be seen by the nurse-midwife, or Birthing Center physician, more often for prenatal care, no matter which group I am in if needed.

9. I have been told that I may be selected by chance to have an audiotape recording made of one of my prenatal care visits with the nurse-midwife during my pregnancy. These audiotapes will be used for research purposes only and my identity will not be revealed. The audiotapes will only be listened to by Ms. Walker and her research assistant. I have the right to listen to the tapes made as part of

the study to decide if parts or all should be changed or erased. I have been told that the audiotapes will be destroyed when their use in this study is finished unless I specifically agree to have them kept for future teaching purposes. If I agree to have these audiotapes used for teaching purposes, I will be asked to sign a separate consent form.

10. I understand that there will be no cost to me for participating in this study other than the costs involved for the usual pregnancy care that would be present for similar patients not involved in this study. I understand that I will not be given any money or reward for participating in this study.

11. I understand that any information derived from this research project which personally identifies me will not be voluntarily released or disclosed without my separate consent, except as specifically required by law.

12. I have been instructed that Deborah Walker, RNP, CNM, MS can be reached at the UCI Bi[redacted] of the procedures performed as part of this study.

13. I understand that I may refuse to participate or may withdraw from this study at any time without any negative consequences. I understand that circumstances may arise which might cause the investigator to terminate my participation before completion of the study. I understand that if I have any questions, comments, or about the study or the informed consent process, I may write or call the office of the Vice Chancellor-Research Programs, 3134 Murphy Hall, UCLA, Los Angeles, CA 90024-1405, [redacted] or the Human Research Administration, 115 Administration Building, UC Irvine, Irvine, CA 92717, [redacted]

14. **In signing this consent form, I acknowledge receipt of a copy of the form, as well as a copy of the Subject's Bill of Rights (see next page).**

I consent to participate.

SIGNATURE OF
SUBJECT:_____DATE_____

SIGNATURE OF
WITNESS:_____DATE_____

SIGNATURE OF
INVESTIGATOR:_____DATE_____

CONSENT FORM - PART II

1. Participation in research is entirely voluntary. You may refuse to participate or withdraw from participation at any time without jeopardy to future medical care, employment, student status or other entitlements. The investigator may withdraw you at his/her professional discretion.

2. If, during the course of the study, significant new information which has been developed becomes available, which may relate to your willingness to continue to participate, this information will be provided to you by the investigator.

3. Information derived from the research that personally identifies you will not be voluntarily released or disclosed without your separate consent, except as specifically required by law.

4. In studies involving investigational drugs and devices, the U.S. Food and Drug Administration may inspect your medical records which relate to your participation in this study. This may include copying of medical records.

5. If at any time you have questions regarding the research or your participation, you should contact the investigator who must answer all questions. A telephone number is provided at the top of Part I of the consent form.

6. If at any time you have comments regarding the conduct of this research, questions about your rights as a research subject, or if you feel you have suffered a research-related illness for which you have received treatment, you should contact the UC Irvine Human Research Administration Office. If you are injured as a direct result of research procedures not done primarily for your own benefit, the University will provide medical care to treat the injury at no cost. The University of California does not provide any other form of compensation for injury.

For additional information regarding the items above, you should telephone the Human Research Administration Office [redacted]

EXPERIMENTAL SUBJECTS' BILL OF RIGHTS

Any person who is asked to consent to participate as a human subject in a medical investigation or who is asked to consent on behalf of another, has the following rights:

1. To be told what the study is trying to find out.

2. To be told what will happen in the study and whether any of the procedures, drugs or devices is different from what would be used in standard medical practice.

3. To be told about the risks, side effects or discomforts which may be expected.

4. To be told if any benefit can be expected from participating and if so, what the benefit might be.

5. To be told of other choices available and how they may be better or worse than being in the study.

6. To be allowed to ask any questions concerning the study, both before agreeing to be involved and anytime during the course of the study.

7. To be told of any medical treatment available if complications arise.

8. To refuse to participate at all, either before or after the study has started. This decision will not affect any right to receive standard medical treatment.

9. To receive a signed and dated copy of Parts I and II of the consent form and this Bill of Rights.

10. To be allowed time to decide to consent or not to consent to participate without any pressure being brought by the investigators or others.

Rev. 1/94

APPENDIX C

UNIVERSITY OF CALIFORNIA, IRVINE

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO SANTA BARBARA • SANTA CRUZ

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY
COLLEGE OF MEDICINE

Mailing Address
Department of Obstetrics and Gynecology
UCI Medical Center
P.O. Box 14091
Orange, California 92613-1491

Office Address
UCI Medical Center
101 The City Drive
Orange, California 92668

March 17, 1993

TO WHOM IT MAY CONCERN

RE: Grant Proposal: "Evaluating an Alternative Prenatal Care Visit Schedule for Low-Risk Pregnant Women"

As Chairman of the Department of Obstetrics and Gynecology at the University of California, Irvine and as the Medical Director of the UCI Birthing Center, it is my distinct pleasure to write this letter of support on behalf of Deborah S. Walker, C.N.M., to conduct this very important study at the UCI Birthing Center. The issue of frequency of visits, for both high quality and cost effective patient care, has never been addressed in an appropriately scientific manner. While it is clear that prenatal care improves the perinatal outcome, the number of visits essential to accomplish the optimal perinatal outcome is not clear. I have reviewed, in detail, the proposal by Deborah Walker to study this very important question and the study design is superb. The setting in which she will perform this study is ideal, as we have a reasonable volume of motivated patients in a controlled setting, as well as an extremely committed and cohesive group of nurse midwives providing prenatal care.

It is my very sincere hope that you will be able to support this extremely significant study which the Department of Obstetrics and Gynecology of the University of California, Irvine supports and endorses.

Sincerely,

[redacted]

Thomas J. Garite, M.D.
Professor and Chairman
Department of Obstetrics and Gynecology

TJG/kaw

C: B.J. Snell, PhD, RN, CNM

UNIVERSITY OF CALIFORNIA

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO | SANTA BARBARA • SANTA CRUZ

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY
COLLEGE OF MEDICINE

Mailing Address:
Department of Obstetrics and Gynecology
UCI Medical Center
P.O. Box 14091
Orange, California 92613-1491

Office Address:
UCI Medical Center
101 The City Drive
Orange, California 92668

February 18, 1993

Deborah Walker, MS, CNM, FNP
Assistant Clinical Professor
UCI Birthing Center
300 W. Cerritos, Bldg. 7
Anaheim, CA 92805

Dear Deborah:

As Director of Nurse-Midwifery at the UCI Birthing Center, I am writing this letter of support to confirm the plans for the nurse-midwives and staff of the UCI Birthing Center to collaborate with you in the implementation of your doctoral dissertation study "Evaluation of an Alternative Prenatal Care Visit Schedule for Low-Risk Pregnant Women". The Birthing Center will participate in this study for the duration of the project, which I understand to be approximately one year.

As you know, we at the Birthing Center feel a very strong commitment toward offering high-quality, cost-effective, accessible prenatal care to the women of Orange County. I look forward to working with you on this most important project which could increase the efficiency with which prenatal care is delivered as well as increase access to care for low-risk pregnant women. In addition, enhancing the self-care skills of the women in your study so that they can better care for themselves and their families will enrich their own lives and that of their families and importantly save health care dollars.

I am pleased to serve as a consultant to you on this project. My services are available to you in this regard throughout the duration of the study. Best wishes to you in obtaining funding for this vitally important project.

Sincerely,

[redacted]

B.J. Snell, PhD, CNM
Director of Nurse-Midwifery
UCI Birthing Center

UNIVERSITY OF CALIFORNIA

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO SANTA BARBARA • SANTA CRUZ

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY
COLLEGE OF MEDICINE

Mailing Address:
Department of Obstetrics and Gynecology
UCI Medical Center
P.O. Box 14091
Orange, California 92613-1491

Office Address:
UCI Medical Center
101 The City Drive
Orange, California 92668

March 6, 1993

Deborah S. Walker, MS, CNM, CFNP
[redacted]

Dear Ms. Walker:

I am writing this letter as Assistant Medical Director of the UCI Birthing Center in support of your using the UCI Birthing Center as the research site for your doctoral dissertation study "Evaluation of an Alternative Prenatal Care Visit Schedule for Low-Risk Pregnant Women". I feel that this is a very important topic, and one which needs further scientific study.

I am delighted to act as a consultant to you. I wish you well in your evaluation of this vitally important area.

[redacted]
Vicki Darrow, MD
Assistant Medical Director
UCI Birthing Center
300 W. Cerritos, Bldg. 7
Anaheim, CA 92805

APPENDIX D

Daily Self-Care Activity Log

Instructions: The Daily Self-Care Activity Log is for you to record the activities you do everyday to help yourself have a healthy pregnancy and baby. Place an **X** or checkmark(✓) in the box everyday when you have completed each activity. For example, if you are now 9 weeks pregnant and it is Sunday and you have just taken your prenatal vitamin, find the first "S" column for the 9th week of pregnancy, follow the column down to the Prenatal Vitamin box and put a mark there.

If you are beginning your prenatal care after the 3rd month (8th to 11th weeks) of your pregnancy, begin using the log at the week of pregnancy that you are in now. Please look at the discussion checklists in the earlier months to make sure that all of the information has been discussed. If you are beginning prenatal care earlier than 8 weeks, follow the self-care activities but do not start recording your activities until the 8th week.

The Daily Self-Care Activity Log may be brought with you to your prenatal visits for discussion with your nurse-midwife. At the 2-3 day newborn baby visit after the birth of your baby, please return the completed log to Deborah Walker, CNM, DNSc(c) or to a staff person at the Birthing Center. If you have any questions, please ask a Birthing Center staff member or Deborah Walker. Thank you for helping us find out more about prenatal care by being a part of this study. May you have a healthy and joyful pregnancy and a healthy baby.

Prenatal Visits by Weeks of Pregnancy

Alternative Prenatal Care Visit Schedule	**Initial Visit, one visit at 15-19 weeks, one visit at 24-28 weeks, one visit at 32 weeks, one visit at 36weeks, one visit at 38 weeks, then weekly visits until the birth of your baby.**

Daily Self-Care Activities–3rd Month (8th through 11th Week) of Pregnancy Name:_____.
Prenatal Care Visit: *First* Visit.
(Please call the Birthing Center if you have any questions or concerns before your next prenatal visit (714) 456-7200).

Days of the Week	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S
	8th Week							9th Week							10th Week							11th Week						
Sleep/Rest																												
8-10 Hours per night																												
Less than 8 Hours																												
More than 10 Hours																												
Nap during the day																												
Nutrition																												
Protein (2-3 servings) Meat, eggs, beans etc.																												
Fruit (2-3 servings)																												
Veletables(3-5 serv)																												
Dairy Products (2-3 servings) Milk, cheese																												
Grains (6-11 serv.) Bread, tortillas, etc.																												
Prenatal Vitamins																												
Liquids (8+ glasses)																												
Daily Exercise																												
Information gained about preg.: Books, videos, classes etc.																												

Discussion Checklist (To be discussed with the Nurse-Midwife at your prenatal care visit.)

- ☐Your Questions and Concerns:_____.
- ☐Common Concerns of Pregnancy
- ☐Sexual Activity
- ☐Smoking/Drugs/Alcohol--not to be used in pregnancy.
- ☐Signs and Symptoms of Problems in Pregnancy
- ☐Prenatal Classes
- ☐Baby Feeding Method
- ☐Diet/Nutrition/Weight Gain
- ☐Exercise

Daily Self-Care Activities—4th Month (12th through 15th Week) of Pregnancy Name:_____

Prenatal Care Visit: No *Scheduled* Visit, if you were seen earlier in your pregnancy.

(Please call the Birthing Center if you have any questions or concerns before your next prenatal visit (714) 456-7200).

Days of the Week	S M T W TH F S	S M T W TH F S	S M T W TH F S	S M T W TH F S
	12th Week	13th Week	14th Week	15th Week
Sleep/Rest				
8-10 Hours per night				
Less than 8 Hours				
More than 10 Hours				
Nap during the day				
Nutrition				
Protein(2-3 servings) Meat, eggs, beans etc				
Fruits (2-3 servings)				
Vegetables(3-5serv)				
Dairy Products (2-3 servings) Milk, cheese				
Grains(6-11 serv) Bread, tortillas, etc				
Prenatal Vitamins				
Liquids (8+ glasses)				
Daily Exercise				
Information gained about preg.: Books, videos, classes etc.				

Discussion Checklist (To be discussed with the Nurse-Midwife at your next prenatal care visit.)

- ☐Your Questions and Concerns:_____
- ☐Diet/Nutrition/Weight Gain
- ☐Common Concerns of Pregnancy
- ☐Sexual Activity
- ☐Smoking/Drugs/Alcohol--not to be used in pregnancy.
- ☐Prenatal Classes
- ☐ Signs and Symptoms of Pregnancy Complications

Daily Self-Care Activities–5th Month (16th through 19th Week) of Pregnancy Name:_____

Prenatal Care Visit: *One* visit between 15-19 weeks of your pregnancy.

(Please call the Birthing Center to schedule your prenatal visit (714) 456-7200).

Days of the Week	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S
	16th Week							17th Week							18th Week							19th Week						
Sleep/Rest																												
8-10 Hours per night																												
Less than 8 Hours																												
More than 10 Hours																												
Nap during the day																												
Nutrition																												
Protein (2-3servings) Meat, eggs, beans etc.																												
Fruit (2-3 servings)																												
Vegetables(3-5serv)																												
Dairy Products (2-3 servings) Milk, cheese																												
Grains (6-11 serv.) Bread, tortillas, etc.																												
Prenatal Vitamins																												
Liquids (8+ glasses)																												
Daily Exercise																												
Information gained about preg.: Books, videos, classes etc.																												

Discussion Checklist (To be discussed with the Nurse-Midwife at your prenatal care visit.)

☐Your Questions and Concerns:_____

☐Diet/Nutrition/Weight Gain

☐Common Concerns of Pregnancy

☐Maternal Serum Alphafetoprotein Test (MSAFP) A laboratory test done by taking blood from you between 15-19 weeks of pregnancy to evaluate the nervous system of the baby.

Daily Self-Care Activities–6th Month (20th through 23rd Week) of Pregnancy Name:_____

Prenatal Care Visit: No *Scheduled* Prenatal Visit.

(Please call the Birthing Center if you have any questions or concerns before your next visit (714) 456-7200).

Days of the Week	S M T W TH F S	S M T W TH F S	S M T W TH F S	S M T W TH F S
	20th Week	21st Week	22nd Week	23rd Week
Sleep/Rest				
8-10 Hours per night				
Less than 8 Hours				
More than 10 Hours				
Nap during the day				
Nutrition				
Protein(2-3 servings) Meat, eggs, beans etc.				
Fruit (2-3 servings)				
Vegetables(3-5serv)				
Dairy Products (2-3 servings) Milk, cheese				
Grains (6-11 serv.) Bread, tortillas, etc.				
Prenatal Vitamins				
Liquids (8+ glasses)				
Daily Exercise				
Information gained about preg.: Books, videos, classes etc.				

Discussion Checklist (To be discussed with the Nurse-Midwife at your next prenatal care visit.)

☐Your Questions and Concerns:_____

☐Diet/Nutrition/Weight gain

☐Signs and Symptoms of Premature Labor

☐When did you *first* feel the baby move?_____(date).

☐Diabetes Test (A one-hour test to check for high blood sugar done between 24-28 weeks of pregnancy; at your next visit)

Daily Self-Care Activities–7th Month (24th through 27th Week) of Pregnancy Name:_____

Prenatal Care Visit: *One* visit between 24-28 weeks of your pregnancy.

(Please call the Birthing Center to schedule your prenatal visit (714) 456-7200).

Days of the Week	S M T W TH F S	S M T W TH F S	S M T W TH F S	S M T W TH F S
	24th Week	25th Week	26th Week	27th Week
Sleep/Rest				
8-10 Hours per night				
Less than 8 Hours				
More than 10 Hours				
Nap during the day				
Nutrition				
Protein (2-3servings) Meat, eggs, beans etc.				
Fruit (2-3 servings)				
Vegetables(3-5serv.)				
Dairy Products (2-3 servings) Milk, cheese				
Grains (6-11 serv.) Bread, tortillas, etc.				
Prenatal Vitamins				
Liquids (8+ glasses)				
Daily Exercise				
Baby Movement Counts–Daily				
Information gained about preg.: Books, videos, classes etc.				

Discussion Checklist (To be discussed with the Nurse-Midwife at your prenatal care visit.)

☐Your Questions and Concerns :_____

☐Diet/Nutrition/Weight Gain ☐Childbirth Preparation Classes ☐Diabetes Test

☐Signs and Symptoms of Premature Labor ☐ Baby Movement Counts

Daily Self-Care Activities–8th Month (28th-31st week) of Pregnancy Name:_____

Prenatal Care Visit: No *scheduled* visit.**

**Please call the Birthing Center if you have any questions or concerns before your next visit.

Days of the Week	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S
	28th Week							29th Week							30th Week							31st Week						
SLEEP																												
8-10 Hours per night																												
Less than 8																												
More than 10																												
Nutrition																												
Protein(2-3 serving) Meat, eggs, beans etc																												
Fruit (2-3 servings)																												
Vegetables(3-5serv																												
Dairy Products (2-3 servings) Milk, cheese																												
Grains (6-11 serv) Bread, tortillas, pasta																												
Prenatal Vitamins																												
Liquids (8+ glasses)																												
Daily Exercise																												
Baby Movement Counts–Daily																												
Information about pregnancy																												

Discussion Checklist (To be discussed with the Nurse-Midwife at your prenatal care visit.)

- ☐Your Questions and Concerns:_____
- ☐Childbirth Preparation Classes
- ☐Baby Movement Counts
- ☐Signs and Symptoms of Premature Labor
- ☐Signs and Symptoms of High Blood Presssure of Pregnancy
- ☐Questions and Concerns about Pregnancy
- ☐ Diet/Nutrition/Weight Gain

Self-Care Activities–9th Month (32nd through 35th week) of Pregnancy Name:_____

Prenatal Care Visit: *One* visit in the 32nd week of your pregnancy.
(Please call the Birthing Center to schedule your prenatal visit (714) 456-7200).

Days of the Week	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S
	32nd Week							33rd Week							34th Week							35th Week						
Sleep/Rest																												
8-10 Hours per night																												
Less than 8 Hours																												
More than 10 Hours																												
Nap during the day																												
Nutrition																												
Protein (2-3servings) Meat, eggs, beans etc.																												
Fruit (2-3 servings)																												
Vegetables(3-5serv)																												
Dairy Products (2-3 servings) Milk, cheese																												
Grains (6-11serv) Bread, tortillas, etc.																												
Prenatal Vitamins																												
Liquids (8+ glasses)																												
Daily Exercise																												
Baby Movement Counts–Daily																												
Information about pregnancy: Books, Videos, Magazines																												

Discussion Checklist (To be discussed with the Nurse-Midwife at your prenatal care visit.)

- ☐Your Questions and Concerns:_____
- ☐Signs and Symptoms of High Blood Pressure of Pregnancy
- ☐Signs and Symptoms of Premature Labor
- ☐Childbirth Classes
- ☐Baby Movement Counts
- ☐Baby Feeding Method
- ☐Diet/Nutrition/Weight Gain

Self-Care Activities–10th Month (36th through 39th week) of Pregnancy Name:_____

Prenatal Care Visits: *Three* visits; one at 36 weeks of your pregnancy, one at 38 weeks and one at 39 weeks of pregnancy.
(Please call the Birthing Center to schedule your prenatal visits (714) 456-7200).

Days of the Week	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S
	36th Week							37th Week							38th Week							39th Week						
Sleep/Rest																												
8-10 Hours per night																												
Less than 8 Hours																												
More than 10 Hours																												
Nap during the day																												
Nutrition																												
Protein (2-3servings) Meat, eggs, beans etc.																												
Fruit (2-3 servings)																												
Vegetables(3-5serv)																												
Dairy Products (2-3 servings) Milk, cheese																												
Grains (6-11 serv.) Bread, tortillas, etc.																												
Prenatal Vitamins																												
Liquids (8+glasses)																												
Daily Exercise																												
Baby Movement Counts–Daily																												
Information about pregnancy: Books, Videos, Magazines																												

Discussion Checklist (To be discussed with the Nurse-Midwife at your prenatal care visits.)

- ☐ Your Questions and Concerns:_____
- ☐ Signs and Symptoms of High Blood Pressure of Pregnancy
- ☐ Signs and Symptoms of Labor
- ☐ Baby Feeding Method
- ☐ Contraception
- ☐ Baby Care/Health Care Provider

Self-Care Activities—40th through 43rd week of Pregnancy Name:_____.
Prenatal Care Visits: *Weekly* visits until the birth of your baby.
(Please call the Birthing Center to schedule your prenatal visits (714) 456-7200).

Days of the Week	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S	S	M	T	W	TH	F	S
	40th Week							41st Week							42nd Week							43rd Week						
Sleep/Rest																												
8-10 Hours per night																												
Less than 8 Hours																												
More than 10 Hours																												
Nap during the day																												
Nutrition																												
Protein (2-3servings) Meat, eggs, beans etc.																												
Fruit (2-3 servings)																												
Vegetables(2-3serv)																												
Dairy Products (2-3 servings) Milk, cheese																												
Grains (6-11 serv.) Bread, tortillas, etc.																												
Prenatal Vitamins																												
Liquids (8+ glasses)																												
Daily Exercise																												
Baby Movement Counts–Daily																												
Testing for the baby's health–2/wk until birth.																												

Discussion Checklist (To be discussed with the Nurse-Midwife at your prenatal care visits.)

- ☐Your Questions and Concerns:_____.
- ☐Signs and Symptoms of High Blood Pressure of Pregnancy
- ☐Signs and Symptoms of Labor -When to come to the Birthing Center
- ☐Contraception
- ☐Postpartum Care
- ☐Baby Movement Counts
- ☐Baby Feeding Method
- ☐Baby Care/Health Care Provider/2-3 Day Visit at Birthing Center

APPENDIX E

MATERNAL BACKGROUND/PERSONAL CHARACTERISTICS QUESTIONNAIRE

OFFICE USE ONLY

Name:_____

ID __ __ __
1 2 3

Today's Date: ____/ ____/ ____ __ __/__ __/__ __
Month Day Year 4 5 6 7 8 9

1. Birthdate_____/ _____/ _____ __ __/__ __/__ __
Month Day Year 10 11 12 13 14 15

2. Check the category that best describes your racial/ethnic group and circle your nationality, if indicated: ___
16

_____1. White (Caucasian)
_____2. Black (American/African American)
_____3. Hispanic (Mexican-American/Puerto-Rican/Spanish (from Spain)/Central American--for example, Honduras, El Salvador/South American
_____4. Asian (Chinese/Korean/Japanese/Filipino/Thai/Vietnamese/ Cambodian/Laotian/Lao Hmong)
_____5. Native American (Indian)/ Pacific Islander
_____6. Other (Name your background)_____.

17 18 19 20 21 22 23 24 25 26

3. Were you born in the United States? ____1. Yes (0) ____2. No (1) ___
27

4. If you were not born in the United States, how long have you lived in the United States?_____Years _____Months
28 29 30
(months)

5. What language(s) do you speak? ____1. English ____3. English and Spanish ___
____2. Spanish ____4. Other:_____ 31

6. What language(s) do you read? ____1. English ____3. English and Spanish ___
____2. Spanish ____4. Other:_____ 32

7. Current Marital Status (check one answer):

_____1. Single _____4. Separated ___
_____2. Married _____5. Widowed 33
_____3. Divorced _____6. Living together, not married

Please Continue on Next Page

Maternal Background/Personal
Characteristics Questionnaire

8. How many years of regular schooling have you completed? (Check one answer) 34 35

___0 ___1 ___2 ___3 ___4 ___5 ___6 ___7 ___8

___9 ___10 ___11 ___12 ___13 ___14 ___15+

9. If you answered 15+ years of education –additional education completed (Check highest level completed): 36

_____1. Bachelor's ____2. Master's _____3. Doctorate

10. What is your religious preference? (Check one) 37

____1. Protestant ____4. I don't know
____2. Catholic ____5. None
____3. Jewish ____6. Other:_____.

11. Approximately how much money do you and the people who help to support you EARN TOGETHER per year? (Check One) 38 39

_____1. $5,000 or less per year _____6. $25,000 - $30,000 per year
_____2. $5,001 - $10,000 per year _____7. $30,001 - $35,000 per year
_____3. $10,001 - $20,000 per year _____8. $35,001 - $40,000 per year
_____4. $20,001 - $25,000 per year _____9. Greater than $40,000 per year
____10. Don't know

12. Are you currently working (employed)? 40

_____1. Yes, part-time _____3. No
_____2. Yes, full-time

13. How many times have you been pregnant, including your present pregnancy? (Check one) 41

_____1. One _____4. Four
_____2. Two _____5. Five or more
_____3. Three

14. How many live births have you had? (Check one) 42

_____1. None _____4. Three
_____2. One _____5. Four
_____3. Two _____6. Five or more

15. When was your last baby born? (Check one) 43

_____0. This is my first baby
_____1. Less than 1 year ago _____4. 3 years ago
_____2. 1 year ago _____5. 4 years ago
_____3. 2 years ago _____6. 5 or more years ago

Please Continue on Next Page

Maternal Background/Personal
Characteristics Questionnaire

16. When was the first day of your last normal menstrual period?

_____ _____ _____
Month Day Year

__ __/__ __/__ __
44 45 46 47 48 49
mm dd yy

17. How many weeks pregnant are you now? _____weeks.

__ __ weeks
50 51

18. How tall are you? _____inches\ _____centimeters.

__ __ inches.
52 53

19. How much did you weigh before you got pregnant?
_____ pounds\ _____kilos.

__ __ __ pounds.
54 55 56

20. How many cigarettes do you smoke a day?
_____1. None
_____2. Less than 5
_____3. 5-10
_____4. 10-20
_____5. More than 20

__
57

21. Have you or are you currently using alcohol during this pregnancy?
_____1. I have never used alcohol.
_____2. I was drinking alcohol but quit when I found out I was pregnant.
_____3. I am still using alcohol. How often?:_____.

__
58

22. Have you used or are you currently using any street drugs?
_____1. I have never used drugs
_____2. I was using drugs but quit when I found out I was pregnant.
_____3. I am still using drugs. Type:_____.

__
59

23. What type of health insurance do you have?

__
60

_____1. Medi-Cal
_____2. Private Insurance (For example Blue Cross/Blue Shield, Health Net, CHAMPUS etc.)
_____3. Self-pay
_____4. Other (Please explain)_____.

If you are covered by Medi-Cal for this pregnancy and did not have Medi-Cal before you became pregnant please answer Questions 24 and 25, otherwise please go on to Question 26.

24. If you are covered by Medi-Cal now, how many weeks pregnant were you when you applied for your Medi-Cal coverage? _____weeks.

__ __
61 62

25. How many weeks did you wait to receive your Medi-Cal stickers? _____weeks.

__ __
63 64

26. Please tell us why you decided to start your prenatal care now:_____
_____.

Please Continue on Next Page

27. If you have had a baby before, please tell us what you liked and didn't like about your prenatal care:
I liked:_____
_____.

I didn't like:_____
_____.

28. Please explain what you think are the most important reasons for coming to prenatal care: :_____
_____.

29. What helps you get prenatal care?_____
_____.

30. What gets in the way of your getting prenatal care?_____
_____.

Thank you for completing this questionnaire.

Exercise of Self-Care Agency Scale
by B.Y. Kearney and B.J. Fleischer

This is not a test with right or wrong answers. It is an instrument which helps you assess yourself in terms of the degree in which you take care of your health needs.
Read each statement and circle the number next to the statement which best describes how <u>you</u> feel about the statement. Remember there are <u>no</u> right or wrong answers.

4 Very Characteristic (Very Like Me)	3 Somewhat Characteristic (Somewhat Like Me)	2 No Opinion	1 Somewhat Uncharacteristic (Somewhat Unlike Me)			0 Very Uncharacteristic (Very Unlike me)
1. I would gladly give up some of my set ways if it meant improving my health.		4	3	2	1	0
2. I like myself.		4	3	2	1	0
3. I often feel that I lack the energy to care for my health needs the way I would like to.		4	3	2	1	0
4. I know how to get the facts I need when my health feels weakened.		4	3	2	1	0
5. I take pride in doing the things I need to do in order to remain healthy.		4	3	2	1	0
6. I tend to neglect my personal needs.		4	3	2	1	0
7. I know my strong and weak points.		4	3	2	1	0
8. I seek help when unable to care for myself.		4	3	2	1	0
9. I enjoy starting new projects.		4	3	2	1	0
10. I often put off doing things that I know would be good for me.		4	3	2	1	0
11. I usually try home remedies that have worked in the past rather than going to see a doctor or nurse for help.		4	3	2	1	0
12. I make my own decisions.		4	3	2	1	0
13. I perform certain activities to keep from getting sick.		4	3	2	1	0

PLEASE CONTINUE ON THE NEXT PAGE

Exercise of Self-Care
Agency Scale

4 Very Characteristic (Very Like Me)	3 Somewhat Characteristic (Somewhat Like Me)	2 No Opinion	1 Somewhat Uncharacteristic (Somewhat Unlike Me)				0 Very Uncharacteristic (Very Unlike me)
14. I strive to better myself.			4	3	2	1	0
15. I eat a balanced diet.			4	3	2	1	0
16. I complain a lot about the things that bother me without doing much about them.			4	3	2	1	0
17. I look for better ways to look after my health.			4	3	2	1	0
18. I expect to reach my peak wellness.			4	3	2	1	0
19. When I have a problem, I usually want an expert to tell me what to do.			4	3	2	1	0
20. I deserve all the time and care it takes to maintain my health.			4	3	2	1	0
21. I follow through on my decisions.			4	3	2	1	0
22. I have no interest in learning about my body and how it functions.			4	3	2	1	0
23. If I am not good to myself, I believe I cannot be good for anyone else.			4	3	2	1	0
24. I understand my body and how it functions.			4	3	2	1	0
25. I rarely carry out the resolutions I make			4	3	2	1	0
26. I am a good friend to myself.			4	3	2	1	0
27. I take good care of myself.			4	3	2	1	0
28. Health promotion is a chance thing for me.			4	3	2	1	0
29. I have a planned program for rest and exercise.			4	3	2	1	0
30. I am interested in learning about various disease processes and how they affect me.			4	3	2	1	0

PLEASE CONTINUE ON THE NEXT PAGE

Exercise of Self-Care
Agency Scale

4 Very Characteristic (Very Like Me)	3 Somewhat Characteristic (Somewhat Like Me)	2 No Opinion	1 Somewhat Uncharacteristic (Somewhat Unlike Me)			0 Very Uncharacteristic (Very Unlike me)
31. Life is a joy.		4	3	2	1	0
32. I do not contribute to my family's functioning.		4	3	2	1	0
33. I take responsibility for my own actions.		4	3	2	1	0
34. I have little to contribute to others.		4	3	2	1	0
35. I can usually tell that I am coming down with something days before I get sick.		4	3	2	1	0
36. Over the years I have noticed the things to do that make me feel better.		4	3	2	1	0
37. I know what foods to eat and keep me healthy.		4	3	2	1	0
38. I am interested in learning all that I can about my body and the way it functions.		4	3	2	1	0
39. Sometimes when I feel sick I ignore the feeling and it goes away.		4	3	2	1	0
40. I seek information to care for myself. concerning my health.		4	3	2	1	0
41. I feel I am a valuable member of my family.		4	3	2	1	0
42. I remember when I had my last health check and return on time for my next one.		4	3	2	1	0
43. I understand myself and my needs pretty well.		4	3	2	1	0

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE

MATERNAL SOCIAL SUPPORT INDEX (MSSI) Date Completed:_____

Please share with us the things you do in your home as a mother by answering the questions below. Check the answer you feel is true for you.

	No One	I Generally Do It	Generally Someone Else Does It	Someone Else and I Do It	Score
1. Who fixes meals?	_____	_____	_____	_____	[__] 1
2. Who does the grocery shopping?	_____	_____	_____	_____	[__] 2
3. Who lets your children know what is right or wrong?	_____	_____	_____	_____	[__] 3
4. Who fixes things around the house or apartment?	_____	_____	_____	_____	[__] 4
5. Who does the inside cleaning?	_____	_____	_____	_____	[__] 5
6. Who works outside around the house or apartment?	_____	_____	_____	_____	[__] 6
7. Who pays the bills?	_____	_____	_____	_____	[__] 7
8. Who takes your child to the doctor if he/she is sick?	_____	_____	_____	_____	[__] 8
9. Who sees to it that your children go to bed?	_____	_____	_____	_____	[__] 9
10. Who takes care of car problems on short notice (if appropriate)?	No Car___	_____	_____	_____	[__] 10
11. If no car can you get one in a few hours if needed?	Yes____	No_____			[__] 11

For the remainder of the questionnaire please CIRCLE the answer that is true for you.

12. How many relatives do you see once a week or more often?

0 1 2 3 4 5 6 7 8 9 10 or more

Would you like to.see relatives: [__] 12

More often Less often It's about right

13. How many people can you count on in times of need? [__] 13

0 1 2 3 4 5 6 7 8 9 10 or more

14. How many people would be able to take care of your children for several hours if needed: [__] 14

0 1 2 3 4 5 6 7 8 9 10 or more

14a. How many of these people are from your neighborhood?

None Some Most All

15. Do you have a boyfriend or husband? Yes No

If yes, how satisfied are you with the talks that you have with your boyfriend or husband? [__] 15

Very Satisfied Satisfied Dissatisfied Very Dissatisfied

16. Are there adults, not including your boyfriend or husband, with whom you have regular talks?

Yes No

If yes, think about the person you talk with the most. How satisfied are you with talks that you have with this person? [__] 16

Very Satisfied Satisfied Dissatisfied Very Dissatisfied

17. How often do you attend meetings of the following groups? [__] 17

		Attend Less Than Once A Month	Attend About Once A Month	Attend More Than Once A Month
A. Religious (e.g. church)	Don't belong			
B. Educational (e.g. school, parent groups)	Don't belong	Less Than Once A Month	About Once A Month	More Than Once A Month
C. Social (e.g. bowling groups, scouting groups)	Don't belong	Less Than Once A Month	About Once A Month	More Than Once A Month
D. Political (e.g. work for local candidate)	Don't belong	Less Than Once A Month	About Once A Month	More Than Once A Month
E. Other:_____	Don't belong	Less Than Once A Month	About Once A Month	More Than Once A Month

18. Are you a member of any committee or do you have any other duties in any of your groups? [__] 18

Yes No

Total Score [__|__]

Sense of Coherence Questionnaire
by A. Antonovsky

Instructions:
Think about whether these next statements accurately represent <u>your</u> feelings at this time. Read each statement and circle the letter next to it that best describes how you feel.

	Never Have This Feeling	Almost Never Have This Feeling	Sometimes Have This Feeling	Often Have This Feeling	Always Have This Feeling
1. You don't really care about what goes on around you.	A	B	C	D	E
2. In the past, you were surprised by how good friends acted.	A	B	C	D	E
3. People who you counted on disappointed you.	A	B	C	D	E
4. Your life has a clear purpose.	A	B	C	D	E
5. You feel you are being treated unfairly.	A	B	C	D	E
6. You feel you are in an unfamiliar situation and don't know what to do.	A	B	C	D	E
7. What you do every day is a source of great satisfaction.	A	B	C	D	E
8. You have very mixed up feelings and ideas.	A	B	C	D	E
9. You have feelings inside you'd rather not feel.	A	B	C	D	E
10. You have felt like a loser in the past.	A	B	C	D	E
11. When something happened, you reacted the right way.	A	B	C	D	E
12. There is little meaning in the things you do from day to day.	A	B	C	D	E
13. You have feelings you're not sure you can control.	A	B	C	D	E

Subject ID __ __ __ __
1 2 3 4

PATIENT SATISFACTION WITH PRENATAL CARE

Omar and Schiffman
1992

Listed below are several reasons women come for prenatal care. We want to know to what extent each of these statements describes <u>your</u> reasons for coming for prenatal care.

For each statement please circle the number under the response which best describes how <u>you</u> feel about the statement. Remember, there are <u>no</u> right or wrong answers.

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
I COME FOR PRENATAL CARE:						
1. because my family/friends urged me to come.	1	2	3	4	5	6
2. because I do not want to take chances with my baby.	1	2	3	4	5	6
3. to get information that I need to care for myself during my pregnancy.	1	2	3	4	5	6
4. to get my vitamins.	1	2	3	4	5	6

IF THIS IS <u>NOT</u> YOUR FIRST PREGNANCY, ANSWER THE NEXT QUESTION (#5). IF THIS IS YOUR <u>FIRST</u> PREGNANCY, SKIP TO THE NEXT PAGE.

5. because of problems with previous pregnancy(ies).	1	2	3	4	5	6

PLEASE CONTINUE ON NEXT PAGE

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
I EXPECTED:						
15. my provider to be gentle during my physical exam.	1	2	3	4	5	6
16. to receive poor care.	1	2	3	4	5	6
17. someone to listen to my problems.	1	2	3	4	5	6
18. a referral when I tell the clinic/office staff about a problem.	1	2	3	4	5	6
19. the services of a social worker to be part of prenatal care.	1	2	3	4	5	6
20. the services of a nutritionist to be part of prenatal care.	1	2	3	4	5	6
21. the services of a public health nurse to be part of prenatal care.	1	2	3	4	5	6
22. childbirth education classes to be part of prenatal care.	1	2	3	4	5	6
23. to come for prenatal visits once a month during the first six to seven months.	1	2	3	4	5	6
24. to come for prenatal visits more than once a month during the last two to three months.	1	2	3	4	5	6

PLEASE CONTINUE ON NEXT PAGE

Some women are quite happy and satisfied with their prenatal care while others are not. Listed below are several situations which may describe the relationship you have with your prenatal care provider. For each statement, please circle the number under the response which best describes how you feel about the statement.

Please rate the "PROVIDER" as the individual you see most often for prenatal exams, that is, the doctor, the nurse midwife, or the nurse practitioner who measures your abdomen, does your pelvic exam, listens to your baby's heartbeat. If you see more than one provider, answer the following items for whom you see most often.

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
I AM SATISFIED WITH:						
25. the explanation my provider gave to me of what was going to happen during my prenatal visits.	1	2	3	4	5	6
26. the explanation my provider gave to me about medical procedures.	1	2	3	4	5	6
27. the explanation my provider gave to me about what I can expect with my pregnancy and prenatal care.	1	2	3	4	5	6
28. the way my provider involves me in decisions about my prenatal care.	1	2	3	4	5	6
29. the way my provider treats me.	1	2	3	4	5	6
30. being able to ask questions without embarrassment.	1	2	3	4	5	6
31. the respect that I am shown by my provider.	1	2	3	4	5	6
32. the quality of care that I receive from my provider.	1	2	3	4	5	6
33. the way I am made to feel that I am not wasting my provider's time.	1	2	3	4	5	6
34. the time my provider spends talking about things of interest to me.	1	2	3	4	5	6
35. the information my provider gave to me about how things are going with my pregnancy.	1	2	3	4	5	6
36. the kinds of things my provider discussed during my prenatal visits.	1	2	3	4	5	6
37. the way my provider expresses concern about my overall personal situation.	1	2	3	4	5	6

PLEASE CONTINUE ON THE NEXT PAGE

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
I AM SATISFIED WITH:						
38. the way my provider explains test results to me.	1	2	3	4	5	6
39. the way my provider has prepared me for labor and delivery.	1	2	3	4	5	6
40. the explanation my provider gave to me about of what I can expect about parenting a newborn.	1	2	3	4	5	6
41. the interest and concern my provider has shown to me.	1	2	3	4	5	6
42. the way my provider treats my situation with privacy.	1	2	3	4	5	6
43. my provider's method of performing my physical exams.	1	2	3	4	5	6

For each statement below, please circle the number under the response which best describes how you feel about the statement. Some statements, however, may not apply to everyone. If the statement does not apply to your particular situation, circle the "9" in the column marked "N/A".

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree	N/A
I AM SATISFIED WITH:							
44. the way my provider takes my complaints seriously.	1	2	3	4	5	6	9
45. the understanding shown by my provider about transportation problems for coming to my prenatal visits.	1	2	3	4	5	6	9
46. the time my provider takes with me even though I do not have problems with this pregnancy.	1	2	3	4	5	6	9
47. the way my provider deals with all my medical problems.	1	2	3	4	5	6	9

PLEASE CONTINUE ON THE NEXT PAGE

Some women are quite happy and satisfied with their prenatal care while others are not. Listed below are several situations which may describe the relationship you have with the office/clinic staff. For each statement please circle the number under the response which best describes how you feel about the statement.

Please note: "STAFF" refers to the nurse, receptionist, aide, nutritionist, social worker, lab technician and other people that you may come in contact in the office or clinic.

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
I AM SATISFIED WITH:						
48. the explanation the staff gave to me of what I can expect with my pregnancy and prenatal care.	1	2	3	4	5	6
49. the way the staff involves me in decisions about my prenatal care.	1	2	3	4	5	6
50. the way the staff treats me.	1	2	3	4	5	6
51. being able to ask questions of the staff without embarrassment.	1	2	3	4	5	6
52. the respect that I am shown from the staff.	1	2	3	4	5	6
53. the quality of care that I receive from the staff.	1	2	3	4	5	6
54. the way I am made to feel that I am not wasting the staff's time.	1	2	3	4	5	6
55. the time the staff spend talking about things of interest to me.	1	2	3	4	5	6
56. the way the staff expresses concern about my overall personal situation.	1	2	3	4	5	6
57. the way the staff explains test results to me.	1	2	3	4	5	6

PLEASE CONTINUE ON NEXT PAGE

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
I AM SATISFIED WITH:						
58. the way the staff have prepared me for labor and delivery.	1	2	3	4	5	6
59. the interest and concern the staff have shown to me.	1	2	3	4	5	6
60. the way the staff treats my situation with privacy.	1	2	3	4	5	6

For each statement below, please circle the number under the response which best describes how you feel about the statement. Some statements, however, may not apply to everyone. If the statement does not apply to your particular situation, circle the "9" in the column marked "N/A".

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree	N/A
61. the way the staff takes my complaints seriously.	1	2	3	4	5	6	9
62. the understanding shown by the staff about transportation problems for coming to my prenatal visits.	1	2	3	4	5	6	9
63. the time the staff takes with me even though I do not have problems with this pregnancy.	1	2	3	4	5	6	9
64. the way the staff deals with all my medical problems.	1	2	3	4	5	6	9

PLEASE CONTINUE ON NEXT PAGE

Listed below are statements that describe the availability and types of prenatal care. We want to know to what extent each of these statements describes <u>your</u> satisfaction with prenatal care services.
For each statement, please circle the number under the response which best describes how <u>you</u> feel about the statements.

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
I AM SATISFIED WITH:						
65. how easy it was to find a prenatal care provider.	1	2	3	4	5	6
66. how easy it was to get prenatal care early in my pregnancy (that is before the fourth month).	1	2	3	4	5	6
67. the location of the office/clinic.	1	2	3	4	5	6
68. my ability to schedule prenatal visits at a time convenient for me.	1	2	3	4	5	6
69. how easy it is to reschedule my prenatal visits.	1	2	3	4	5	6
70. the amount of time I wait to be seen by my provider.	1	2	3	4	5	6
71. the <u>total</u> amount of <u>time</u> I spend at the office/clinic.	1	2	3	4	5	6
72. my options for choosing the provider I wanted for prenatal care.	1	2	3	4	5	6
73. the frequency with which I see the same prenatal provider for my care.	1	2	3	4	5	6
74. <u>not</u> having to repeat my story everytime I come for a visit.	1	2	3	4	5	6
75. having all the recommended tests.	1	2	3	4	5	6
76. the number of prenatal visits I made during the first six to seven months.	1	2	3	4	5	6

PLEASE CONTINUE ON NEXT PAGE

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
I AM SATISFIED WITH:						
77. having to come for more prenatal visits during the last two to three months.	1	2	3	4	5	6
78. the parking facilities of the office/ clinic.	1	2	3	4	5	6
79. the waiting room facilities of the office/ clinic.	1	2	3	4	5	6
80. the examination room of the office/ clinic.	1	2	3	4	5	6
81. being able to call someone at the office/ clinic day or night if I have problems.	1	2	3	4	5	6
82. the activities available to me while I wait to be seen by my provider.	1	2	3	4	5	6

For the following statement, please circle the number under the response which best describes how you feel about the statement. If the statement does not apply to your particular situation, circle the "9" in the column "N/A."

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree	N/A
83. the transportation provided to help me get to prenatal visits.	1	2	3	4	5	6	9

IF THIS IS YOUR FIRST PREGNANCY, SKIP TO THE NEXT PAGE.
IF YOU HAVE CHILD(REN), ANSWER THE NEXT QUESTION, #84.

84. the way my child(ren) are treated when they come with me to my prenatal visits.	1	2	3	4	5	6

PLEASE CONTINUE ON NEXT PAGE

For each statement below, please circle the number under the response which best describes how you feel about the statement. Space is provided if you would like to make comments to tell us more about your experience and prenatal care received.

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
85. Based on my experience and information that I have received during prenatal care, I am confident I will be a good mother.	1	2	3	4	5	6
Comments:						
86. I am satisfied with my overall prenatal care and would come here for another pregnancy.	1	2	3	4	5	6
Comments:						

PLEASE CONTINUE ON NEXT PAGE

For the statements below, please check the response which best describes the provider you see most often, that is, who measures your abdomen, does your pelvic exam, listens to your baby's heartbeat. If you see more than one provider, answer the following items for whom you see most often.

---

87. The provider that I see most often for my prenatal exams is a:

____doctor

____nurse midwife

____nurse practitioner

____I see both a doctor and a nurse midwife/nurse practitioner about the same number of times

____do not know

88. The provider I checked above is a:

____woman — If you answered that your provider was a woman, SKIP TO QUESTION #90.

____man — If you answered that your provider was a man, GO TO NEXT QUESTION, #89.

____ — I see both a male and a female provider, GO TO NEXT QUESTION, #89.

89. If the provider that you checked above is a man, would you say that:

____this made no difference to you

____this made some difference to you

____this bothered you a lot

PLEASE CONTINUE ON NEXT PAGE

90. There are a variety of individuals who provide information at the office/clinic you attend for your prenatal care. We want to know how helpful these persons are to you. Please read the list of persons below. Decide how helpful that person is to you. For each statement, please circle the number under the response which best describes how you feel about the person. Circle the "9" in the column marked "not applicable" only if you had no contact with that person during your pregnancy.

	Very Helpful	Helpful	Somewhat Helpful	Not at All Helpful	Not Applicable
____doctor	1	2	3	4	9
____nurse	1	2	3	4	9
____nurse midwife	1	2	3	4	9
____nurse practitioner	1	2	3	4	9
____nutritionist	1	2	3	4	9
____public health nurse	1	2	3	4	9
____social worker	1	2	3	4	9
____OTHER	1	2	3	4	

(please specify _____)

91. There are a variety of sources of information available to you during your pregnancy. We want to know how helpful these sources of information are to you. Please read each statement. Decide how helpful that source of information is to you. For each statement, please circle the number under the response which best describes how you feel about the source of information. Circle the "9" in the column marked "not applicable" only if you did not use the source of information.

	Very Helpful	Helpful	Somewhat Helpful	Not At All Helpful	Not Applicable
____pamphlets/books	1	2	3	4	9
____videotapes	1	2	3	4	9
____childbirth education classes	1	2	3	4	9
____family	1	2	3	4	9
____friends	1	2	3	4	9
____OTHER	1	2	3	4	

(please specify _____)

PLEASE CONTINUE ON NEXT PAGE

Now, we would like to know a little more about you. Please remember that all responses are confidential at no time will the researchers release any information linking you to the survey. For each statement, please check the response that best describes you. Please answer all the questions. Thank you for your help with this project.

---

92. Age _____ (in years)

93. Race (check only one)

_____ Asian
_____ Black
_____ Hispanic
_____ Native American
_____ White (Non-Hispanic)
_____ Other (Please Specify)_____

94. Mark the highest level of education you have completed (check only one):

_____ Less than high school
_____ Some high school
_____ High School Graduate/GED
_____ Some College/Technical School
_____ College Graduate
_____ Post College

95. Mark the response which currently describes your marital status (check only one):

_____ Single
_____ Divorced
_____ Married
_____ Separated
_____ Widowed
_____ Other (please specify)_____

96. Are you working outside the home?

_____ No
_____ Yes If yes, _____ Fulltime
_____ Parttime

97. What kind of insurance do you have? (Check all that apply)

_____ Medicaid (Medi-Cal)
_____ Private Insurance
_____ Medicare
_____ None (Self Pay)

PLEASE CONTINUE ON NEXT PAGE

98. Counting this pregnancy, how many times have you been pregnant?_____

IF YOU ANSWERED "1", SKIP TO QUESTION #99; IF YOU ANSWERED 2 OR MORE, ANSWER QUESTIONS 98A AND 98B.

98a. If you have been pregnant more than once, did you seek prenatal care at this office/clinic for any of these pregnancies?
_____No _____Yes

98b. How many living children do you have? _____

99. How did you make your first prenatal appointment?

_____ by telephone
_____ in person
_____ other (please specify)_____

100. From the time you called or went to the office/clinic, how long did you wait for your first appointment? Identify the amount of time closest to the time you waited. Please check only one category.

_____ less than one week _____ two weeks _____ four weeks
_____ one week _____ three weeks _____ more than 4 weeks. How many___?

101. How far along in your pregnancy were you when you came for your first prenatal visit (Check only one)

_____ 1-3 months
_____ 4-6 months
_____ 7-9 months

102. How many weeks pregnant are you now?_____

103. Identify the amount of time closest to the total amount of time you usually spend at your clinic or office visit.

_____ less than 15 minutes _____ 31 minutes to 45 minutes _____ 61 minutes to 2 hours
_____ 15 minutes to 30 minutes _____ 46 minutes to 60 minutes _____ more than 2 hours

104. Check the one that best describes how many times have you been to the office/clinic for prenatal care.

_____ 1-5 times
_____ 6-10 times
_____ 11 or more times

PLEASE CONTINUE ON THE NEXT PAGE

105. Do you take prenatal (childbirth education) classes?

_____ No _____ Yes →If yes, where?

___ at office/clinic
___ from outside agency, i.e., childbirth classes given in the community
___ in school

106. Do you use tobacco?

_____ No _____ Yes →If yes, how many packs/day? _____

107. Do you use alcohol?

_____ No _____ Yes →If yes, what do you usually drink?
(Check all that apply)

_____ Beer
_____ Wine
_____ Spirits (hard liquor)

If yes, how many alcoholic beverages do you drink per week? _____

108. Which of the following do you take regularly during your pregnancy?
(Check all that apply).

_____ Prenatal vitamins
_____ Iron
_____ Indigestion medicine (i.e., Tums, Rolaids, Mylanta)
_____ Anti-nausea medicine
_____ Tranquilizers
_____ Sleeping pills
_____ Laxatives
_____ Aspirin or other pain killers
_____ Cold Medicine
_____ Street/recreational drugs
_____ Other (Please specify) _____
_____ I have not taken any drugs or medication of any kind during this pregnancy.

YOU ARE FINISHED

PLEASE RETURN THE COMPLETED SURVEY

TO THE PERSON WHO GAVE IT TO YOU.

THANK YOU FOR YOUR PARTICIPATION!

MO:b B:\PSWPCI.INS

Perinatal Outcomes/Prenatal Care Evaluation Instrument

ID ___ ___ ___ (1 2 3)

Infant Health:

1. Gestational age at birth (completed weeks of pregnancy) ___ ___ (4 5)
2. Ballard/Dubowitz score (in weeks). ___ ___ (6 7)
3. Birthweight (in grams): ___ ___ ___ ___ (8 9 10 11)
4. Apgar score at 5 minutes of age: ___ ___ (12 13)
5. Number of inpatient hospital days immediately following birth : (If NONE leave blank)
   NICU: ___ ___ ___ days (14 15 16)
   Newborn Nursery: ___ ___ ___ days. (17 18 19)
6. Neonatal complications (1=Yes, 0=No If NONE leave blank)
   1. Sepsis ___ (20)
   2. Hyperbilirubinemia ___ (21)
   3. Fetal intolerance to labor ___ (22)
   4. Low birthweight ___ (23)
   5. Respiratory Distress ___ (24)
   6. Fetal Anomalies ___ (25)
   7. Other:_____ ___ (26)

Maternal Health:

7. Age (in years) at birth of baby ___ ___ (27 28)
8. Average weekly weight gain (in pounds). ___ ___ ___ (29 30 31)
   (Last weight-First weight/Weeks of Prenatal Care)
   _____-_____/ _____weeks=_____
9. Transfer of care during pregnancy for medical/obstetrical reason? (1=Yes, 0=No) ___ (32)
10. Transfer of care during pregnancy due to maternal desire/wishes? (1=Yes, 0=No) ___ (33)
11. Maternal complications (1=Yes, 0=No If NONE leave blank)
    1. Preterm Labor ___ (34)
    2. Gestational Diabetes ___ (35)
    3. Intrauterine Growth Retardation ___ (36)
    4. Anemia (Hgb <10) at 36 weeks of preg ___ (37)
    5. Recurrent Urinary Tract Infections ___ (38)
    6. Pregnancy induced Hypertension (PIH) ___ (39)

7. Placenta Previa ___ 40

8. Placenta Abruptio ___ 41

9 Fetal Anomalies ___ 42

10. Multiple Gestation ___ 43

11. Fetal malposition ___ 44

12. Substance Abuse ___ 45

13. Post Dates ___ 46

14. Other: _____ ___ 47

12. Number of inpatient hospital days during pregnancy
(If NONE leave blank):

1. First Hospitalization: ___ ___ ___ days (48 49 50)

2. Second Hopitalization: ___ ___ ___ days (51 52 53)

3. Third Hospitalization: ___ ___ ___ days (54 55 56)

4. Fourth or more Hospitalizations: ___ ___ ___ days (57 58 59)

Intrapartum:

13. Date of Baby's Birth: ___ ___ / ___ ___ / ___ ___ (60 61 / 62 63 / 64 65) mm / dd / yy

14. Type of Birth:

1) NSVD, 2) C-Section 3) Vacuum Extraction, 4) Forceps
5) Other: _____ ___ 66

15. Primary provider attending birth:
1) CNM, 2)Resident MD 3) Student Nurse-Midwife,
4) Medical Student, 5) RN
6) Other: _____ ___ 67

16. Transfer to hospital during labor (1=Yes 0=No) ___ 68

17 Reason(s) for transfer (If not transferred leave blank)

1 Thick meconium stained amniotic fluid ___ 69

2 Failure to progress ___ 70

3 Ruptured membranes-Not in labor ___ 71

4 Postpartum hemorrhage ___ 72

5 Fetal malpresentation ___ 73

6 Fetal intolerance to labor/Non-reassuring FHR patterns ___ 74

7. PIH ____ 75

8 Febrile ____ 76

9 Placenta previa ____ 77

10 Placenta abruptio ____ 78

11. Other:_____ ____ 79

18 Length of labor Active phase(4-10cms):___ ___ ___ ___ minutes. 80 81 82 83

Second Stage:(10cms-birth):___ ___ ___minutes 84 85 86

19 Medication (analgesia) used in labor: (1=Yes, 0=No) ____ 87

Type:_____

20 Warm warm immersion used in labor (1=Yes, 0=No) ____ 88

21. Hemocue in labor: (enter actual value) ____ ____ ____ ____ 89 90 91 92

22. Prostin suppositories used in labor: (1=Yes, 0=No) ____ 93

If yes, number:_____ ____ 94

23 Pitocin augmentation used in labor: (1=Yes, 0=No) ____ 95

If yes, highest dosage _____mu/min. ____ 96

Perinatal Outcomes/Prenatal Care
Evaluation Instrument

Evaluation of Prenatal Care

Adherence to Prenatal Visit Schedule:

1. Number of prenatal visits attended before birth ___ ___ 97 98
2. Number of documented phone calls in chart: ___ 99
3. Number of "no-show" prenatal visits: ___ 100
4. Number of UCIBC Evaluation Room visits: ___ 101
5. Number of unscheduled office visits: ___ 102
6. Number of Emergency Room visits (other than at UCIBC): ___ 103
7. Patient initiated transfer of care (1=Yes, 0=No): ___ 104
   Reason:_____

Prenatal Care Indices:

8. MSAFP at 15-20 weeks (1=Yes, 0=No) ___ 105
9. Glucose Screen (1=Yes, 0=No): ___ 106
10. Ultrasounds (Enter actual number): ___ 107
11. Fetal Evaluation Testing (1=Yes, 0=No): ___ 108
12. Anemia (1st trimester) (1=Yes, 0=No) ___ 109
13. Comprehensive Perinatal Services Program participant (1=Yes, 0=No) ___ 110
16. Involved in other research study during prenatal care (1=Yes, 0=No) ___ 111

TABLES

Table 3
Study Participants

Invited to participate	183		
Agreed to participate in study	122 (66%)		
Women experiencing an early pregnancy loss	4		
Dropped out	37		
Completed study	81		
Women completing the study (n=81):		N	%
Delivered at the UCI Birthing Center		61	75
Transferred to UCIMC before labor began		9	11%
Transferred to UCIMC during labor		10	13%
Tranferred to UCIMC during labor due to maternal wishes		1	1%
TOTAL		**81**	**100%**

Table 4
Reasons for Dropping Out of Study (N=37)

	N	%
Transferred care to another provider	12	32%
Personal preference (ie changed mind about participating in study)	9	24%
Desired/required care not provided at Birthing Center (ie VBAC, Epidural, Home birth, Gestational Diabetic, high risk of Preterm labor, etc.)	8	22%
Insurance type changed	3	8%
Relocated to another area	3	8%
Delivered out of the University system	2	6%
TOTAL	**37**	**100%**

Table 5
Mean Scores and Frequency Distributions for the Total Sample
Demographic Data for Total Sample (N=81)

Variable	Mean	SD	Range
Maternal Age	25.29	5.25	(18-40)
Mean months lived in the United States if not born here: (Exculding 1 outlier at 420 months)	70.85	60.43	(9-252)
Mean years of regular schooling completed:	9.56	3.61	(2-15)
Mean number of weeks pregnant at entry into study:	14.44	4.89	(5-25)
Mean number of pregnancies including present pregnancy:	2.36	1.28	(1-5)
Mean height (inches):	61.86	2.79	(57-70)
Mean current weight (pounds):	131.61	28.20	(95-255)
Mean Body Mass Index:	23.74	4.80	(16.34-44.38)
Mean gestational age when applying for Medicaid:	8.89	3.52	(1-16)

Table 5 continued

	N	%
Ethnicity		
White (Caucasian)	18	22.2
Black (American/African American)	0	0
Hispanic (Mexican-American/ Puerto-Rican/Spanish (fromSpain)/Central American	60	74.1
Asian (Chinese/Korean/Japanese/ Filipino/Thai/Vietnamese/ Cambodian/Laotian/Lao Hmong)	1	1.2
Native American (Indian)/ Pacific Islander	0	0
Missing	2	2.4
Born in the United States:		
Yes	21	25.9
No	54	66.7
Missing	6	7.4
Language(s) spoken:		
English	20	24.7
Spanish	45	55.6
English and Spanish	13	16.0
Missing	3	3.7
Languages read:		
English	21	25.9
Spanish	46	56.8
English and Spanish	10	12.3
Missing	4	4.9

Table 5 continued

	N	%
Marital Status		
Single	10	12.3
Married	47	58.0
Divorced	1	1.2
Separated	2	2.5
Widowed	0	0
Living together, not married	18	22.2
Missing	3	3.7
Additional education completed:		
Bachelor's	5	6.2
Master's	1	1.2
Doctorate	1	1.2
Missing	74	91.4
Current religious preference:		
Protestant	3	3.7
Catholic	54	66.7
Jewish	0	0
I don't know	1	1.2
None	6	7.4
Other	11	13.6
Missing	6	7.4
Income:		
$5,000 or less per year	8	9.9
$5,001 - $10,000 per year	13	16.0
$10,001 - $20,000 per year	12	14.8
$20,001 - $25,000 per year	5	6.2
$25,001 - $30,000 per year	1	1.2
$30,001 - $35,000 per year	1	1.2
$35,001 - $40,000 per year	2	2.5
Greater than $40,000 per year	5	6.2
Don't know	13	16.0
Missing	21	25.9

Table 5 continued

	N	%
Currently employed:		
Yes ,full-time	11	13.6
Yes, part-time	14	17.3
No	48	59.3
Missing	8	9.9
Number of previous live births:		
None	31	38.3
One	26	32.1
Two	11	13.6
Three	5	6.2
Four	3	3.7
Five or more	1	1.2
Missing	4	4.9
Length of time between last baby and current pregnancy:		
This is my first baby	27	33.3
Less than 1 year ago	4	4.9
1 year ago	12	14.8
2 years ago	10	12.3
3 years ago	6	7.4
4 years ago	3	3.7
5 or more years ago	12	14.8
Missing	7	8.6
Cigarettes/day:		
None	75	92.6
Less than 5	0	0
5-10	0	0
10- 20	1	1.2
More than 20	0	0
Missing	5	6.2

Table 5 continued

	N	%
Alcohol use during this pregnancy:		
Never used alcohol.	64	79.0
Drinking alcohol but quit when I found out I was pregnant.	14	17.3
Still using alcohol	0	0
Missing	3	3.7
Street drug use during this pregnancy:		
Never used drugs	74	91.4
Using drugs but quit when I found out I was pregnant.	3	3.7
Still using drugs.	0	0
Missing	4	4.9
Type of health insurance:		
Medi-Cal (Medicaid)	66	81.5
Private Insurance (For example Blue Cross/Blue Shield, Health Net CHAMPUS etc.)	8	9.9
Self-pay	2	2.5
Other	0	0
Missing	5	6.2

Table 6
Mean Scores and Frequency Distribution by Group
Demographic Data for Sample by Group

Traditional Prenatal Care Visit Schedule Group (N=38)

Variable	Mean	SD	Range
Maternal Age	26.17	5.41	(19.8-39.9)
Mean months lived in the United States, if not born here:	65.91	56.02	(9-240)
Mean years of regular schooling completed:	9.24	3.77	(2-15)
Mean number of weeks pregnant at entry into study:	14.29	4.59	(7-25)
Mean number of pregnancies, including present pregnancy :	2.64	1.31	(1-5)
Mean height (inches):	63.43	2.52	(58-68)
Mean current weight (pounds):	135.26	25.47	(100-211)
Mean Body Mass Index:	24.36	4.53	(17.75-36.01)
Mean gestational age when applying for MediCal (Medicaid):	9.61	3.64	(3-16)

Table 6 continued

	N	%
Ethnicity		
White (Caucasian)	9	23.7
Black (American/African American)	0	0
Hispanic	28	73.7
Asian (Chinese/Korean/Japanese/ Filipino/Thai/Vietnamese/ Cambodian/Laotian/ Lao Hmong)	0	0
Native American (Indian)/ Pacific Islander	0	0
Missing	1	2.6
Born in the United States:		
Yes	11	28.9
No	24	63.2
Missing	3	7.9
Language(s) spoken:		
English	9	23.7
Spanish	23	60.5
English and Spanish	5	13.2
Missing	1	2.6
Languages read:		
English	9	23.7
Spanish	23	60.5
English and Spanish	5	13.2
Missing	1	2.6

Table 6 continued

	N	%
Marital Status		
Single	4	10.5
Married	20	52.6
Divorced	1	2.6
Separated	1	2.6
Widowed	0	0
Living together, not married	11	28.9
Missing	1	2.6
Additional education completed:		
Bachelor's	1	2.6
Master's	1	2.6
Doctorate	0	0
Missing	36	94.7
Current religious preference:		
Protestant	1	2.6
Catholic	27	71.1
Jewish	0	0
I don't know	1	2.6
None	3	7.9
Other	4	10.5
Missing	2	5.3
Income:		
$5,000 or less per year	3	7.9
$5,001 - $10,000 per year	6	15.8
$10,001 - $20,000 per year	9	23.7
$20,001 - $25,000 per year	2	5.3
$25,001 - $30,000 per year	1	2.6
$30,001 - $35,000 per year	0	0
$35,001 - $40,000 per year	1	2.6
Greater than $40,000 per year	2	5.3
.Don't know	2	5.3
Missing	12	31.6

Table 6 continued

	N	%
Currently employed:		
Yes, full-time	4	10.5
Yes, part-time	9	23.7
No	22	57.9
Missing	3	7.9
Number of previous live births:		
None	16	42.1
One	9	23.7
Two	5	13.2
Three	5	13.2
Four	2	5.3
Five or more	0	0
Missing	1	2.6
Length of time between last baby and current pregnancy:		
This is my first baby	12	31.6
Less than 1 year ago	1	2.6
1 year ago	4	10.5
2 years ago	2	5.3
3 years ago	5	13.2
4 years ago	1	2.6
5 or more years ago	9	23.7
Missing	4	10.5
Cigarettes/day:		
None	35	92.1
Less than 5	0	0
5-10	0	0
10-20	0	0
More than 20	0	0
Missing	3	7.9

Table 6 continued

	N	%
Alcohol use during this pregnancy:		
Never used alcohol.	27	71.1
Drinking alcohol but quit when I found out I was pregnant.	10	26.3
Still using alcohol	0	0
Missing	1	2.6
Street drug use during this pregnancy:		
Never used drugs	34	89.5
Using drugs but quit when I found out I was pregnant.	2	5.3
Still using drugs.	0	0
Missing	2	5.3
Type of health insurance:		
Medi-Cal (Medicaid)	33	86.8
Private Insurance (For example Blue Cross/Blue Shield, Health Net CHAMPUS etc.)	3	7.9
Self-pay	1	2.6
Other	0	0
Missing	1	2.6
Antepartum Transfer		
No	33	86.8
Yes	5	13.2
Intrapartum Transfer		
No	33	86.8
Yes	5	13.2
Transfer Care Due to Maternal Wishes		
No	37	97.4
Yes	1	2.6

Table 7
Mean Scores and Frequency Distribution by Group
Demographic Data for Sample by Group

Alternative Prenatal Care Visit Schedule Group (N=43)

Variable	Mean	SD	Range
Maternal Age	24.49	5.04	(18.3-35.70)
Mean months lived in the United States, if not born here: (Excluding 1 outlier at 420 mo.)	74.63	64.29	(15-252)
Mean years of regular schooling completed:	9.82	3.49	(2-15)
Mean number of weeks pregnant at entry into study:	14.58	5.20	(5-25)
Mean number of pregnancies including present pregnancy :	2.12	1.21	(1-5)
Mean height (inches):	62.38	2.95	(57-70)
Mean current weight (pounds):	128.59	30.24	(95-255)
Mean Body Mass Index:	23.23	5.01	(16.34-44.38)
Mean gestational age when applying for MediCal (Medicaid):	8.11	3.27	(1-16)

Table 7 continued

Variable	N	%
Ethnicity		
White (Caucasian)	9	20.9
Black (American/African American)	0	0
Hispanic	32	74.4
Asian (Chinese/Korean/Japanese/ Filipino/Thai/Vietnamese/ Cambodian/Laotian/Lao Hmong)	1	2.3
Native American (Indian)/ Pacific Islander	0	0
Missing	1	2.3
Born in the United States:		
Yes	10	23.3
No	30	69.8
Missing	3	7.0
Language(s) spoken:		
English	11	25.6
Spanish	22	51.2
English and Spanish	8	18.6
Missing	2	4.7
Languages read:		
English	12	27.9
Spanish	23	53.5
English and Spanish	5	11.6
Missing	3	7.0

Table 7 continued

	N	%
Marital Status		
Single	6	14.0
Married	27	62.8
Divorced	0	0
Separated	1	2.3
Widowed	0	0
Living together not married	7	16.3
Missing	2	4.7
Additional education completed:		
Bachelor's	4	9.3
Master's	0	0
Doctorate	1	2.3
Missing	38	88.4
Current religious preference:		
Protestant	2	4.7
Catholic	27	62.8
Jewish	0	0
I don't know	0	0
None	3	7.0
Other	7	16.3
Missing	4	9.3
Income:		
$5,000 or less per year	5	11.6
$5,001 - $10,000 per year	7	16.3
$10,001 - $20,000 per year	3	7.0
$20,001 - $25,000 per year	3	7.0
$25,001 - $30,000 per year	0	0
$30,001 - $35,000 per year	1	2.3
$35,001 - $40,000 per year	1	2.3
Greater than $40,000 per year	3	7.0
Don't know	11	25.6
Missing	8	18.6

Table 7 continued

Currently employed:		
Yes, full-time	7	16.3
Yes, part-time	5	11.6
No	26	60.5
Missing	5	11.6
Number of previous live births:		
None	15	34.9
One	17	39.5
Two	6	14.0
Three	0	0
Four	1	2.3
Five or more	1	2.3
Missing	3	7.0
Length of time between last baby and current pregnancy:		
This is my first baby	15	34.9
Less than 1 year ago	3	7.0
1 year ago	8	18.6
2 years ago	8	18.6
3 years ago	1	2.3
4 years ago	2	4.7
5 or more years ago	3	7.0
Missing	3	7.0
Cigarettes/day:		
None	40	93.0
Less than 5	0	0
5-10	0	0
10-20	1	2.3
More than 20	0	0
Missing	2	4.7
Alcohol use during this pregnancy:		
Never used alcohol	37	86.0
Drinking alcohol but quit when I found out I was pregnant.	4	9.3
Still using alcohol	0	0
Missing	2	4.7

Table 7 continued

	N	%
Street drug use during this pregnancy:		
Never used drugs	40	93.0
Using drugs but quit when found out I was pregnant.	1	2.3
Still using drugs.	0	0
Missing	2	4.7
Type of health insurance:		
Medi-Cal (Medicaid)	33	76.7
Private Insurance (For example Blue Cross/Blue Shield Health Net, CHAMPUS etc.)	5	11.6
Self-pay	1	2.3
Other	0	0
Missing	4	9.3
Antepartum Transfer		
No	39	90.7
Yes	4	9.3
Intrapartum Transfer		
No	38	88.4
Yes	5	11.6
Transfer due to Maternal wishes		
No	43	100
Yes	0	0

Table 8
ANOVA and Chi Square Comparison of Selected Demographic Data by Control (TPCVSG) vs Experimental (APCVSG) Group

ANOVA

Variable	df	F	p
Maternal Age	1	1.85	0.18
Length of Time (months) Lived in US (Excluding 1 outlier at 420 months)	1	0.27	0.61
Years of Schooling Completed	1	0.47	0.50
Body Mass Index	1	1.08	0.30
Gravida	1	3.24	0.076
Gestational age at Entry into Study/Prenatal Care	1	0.071	0.79

Chi-Square Comparisons

Variable	df	F value	p
Ethnicity	2	0.95	0.62
Born in the US	2	1.51	0.47
Language Spoken	2	0.71	0.70
Marital Status	4	3.14	0.54
Religion	4	2.03	0.73
Parity	5	8.81	0.12
Street Drug use	1	0.50	0.48
Household Income	9	12.14	0.21
Type of Health Insurance	2	0.45	0.80

Table 9
Mean Scores and Frequency Distribution on Demographic Data for Drop Outs (N= 37)

Variable	Mean	SD	Range
Maternal Age	25.17	6.51	(18-38)
Mean months lived in the United States if not born here:	89.86	106.39	(2-384)
Mean years of regular schooling completed:	9.18	4.02	(3-15)
Mean number of pregnancies including present pregnancy :	2.13	1.25	(1-5)
Mean number of weeks pregnant at entry into study:	14.22	5.16	(5-25)
Mean height (inches):	59.20	16.57	
Mean current weight (pounds):	136.00	27.93	(95-220)
Mean Body Mass Index:	24.72	5.67	(17.26- 41.44)
Mean gestational age when applying for MediCal (Medicaid)	7.93	3.71	(4-16)

Table 9 continued

	N	%
Study Group		
Traditional (Control)	19	51.4
Alternative (Experimental)	18	48.6
Ethnicity		
White (Caucasian)	3	8.1
Black (American/African American)	0	0
Hispanic	19	51.4
Asian (Chinese/Korean/Japanese /Filipino/Thai/Vietnamese/ Cambodian/Laotian/Lao Hmong)	1	2.7
Native American (Indian)/ Pacific Islander	0	0
Missing	14	37.8
Born in the United States:		
Yes	5	13.5
No	17	45.9
Missing	15	40.5
Language(s) spoken:		
English	6	16.2
Spanish	15	40.5
English and Spanish	2	5.4
Missing	14	37.8
Languages read:		
English	7	18.9
Spanish	15	40.5
English and Spanish	1	2.7
Missing	14	37.8

Table9 continued

Marital Status		
Single	4	10.8
Married	15	40.5
Divorced	0	0
Separated	2	5.4
Widowed	0	0
Living together not married	1	2.7
Missing	15	40.5
Additional education completed:		
Bachelor's	2	5.4
Master's	1	2.7
Doctorate	0	0
Missing	34	91.9
Current religious preference:		
Protestant	2	5.4
Catholic	18	48.6
Jewish	0	0
I don't know	0	0
None	1	2.7
Other	2	5.4
Missing	14	37.8
Income:		
$5,000 or less per year	1	2.7
$5,001 - $10,000 per year	8	21.6
$10,001 - $20,000 per year	1	2.7
$20,001 - $25,000 per year	0	0
$25,001 - $30,000 per year	1	2.7
$30,001 - $3,000 per year	0	0
$35,001 - $40,000 per year	0	0
Greater than $40,000 per year	3	8.1
Don't know	3	8.1
Missing	20	54.1

Table 9 continued

Currently employed:		
Yes full-time	2	5.4
Yes part-time	3	8.1
No	16	43.2
Missing	6	43.2
Number of previous live births:		
None	12	32.4
One	6	16.2
Two	3	8.1
Three	2	5.4
Four	0	0
Five or more	0	0
Missing	14	7.8
Length of time between last baby and current pregnancy:		
This is my first baby	10	27.0
Less than 1 year ago	3	8.1
1 year ago	3	8.1
2 years ago	2	5.4
3 years ago	1	2.7
4 years ago	1	2.7
5 or more years ago	1	2.7
Missing	16	43.2
Cigarettes/day:		
None	19	51.4
Less than 5	2	5.4
5-10	0	0
10-20	0	0
More than 20	0	0
Missing	16	43.2
Alcohol use during this pregnancy:		
Never used alcohol.	17	45.9
Drinking alcohol but quit when I found out I was pregnant.	5	13.5
Still using alcohol	0	0
Missing	15	40.5

Table 9 continued

	N	%
Street drug use during this pregnancy:		
Never used drugs	21	56.8
Using drugs but quit when I found out I was pregnant.	1	2.7
Still using drugs.	0	0
Missing	15	40.5
Type of health insurance:		
Medi-Cal (Medicaid)	21	56.8
Private Insurance (For example Blue Cross/Blue Shield, Health Net CHAMPUS etc.)	2	5.4
Self-pay	0	0
Other	0	0
Missing	14	37.8

Table 10
ANOVA and Chi-Square Comparison of Drop Outs (N=37)
and Participants (N=81)

ANOVA

Variable	df	F	p
Age	1	0.001	0.98
Length of Time (months) Lived in US (Excluding 1 outlier at 420 months)	1	0.77	0.38
Years of Schooling Completed	1	0.61	0.44
Body Mass Index	1	0.27	0.60
Gravidity	1	0.18	0.60
Gestational Age at Entry into Study/Prenatal Care	1	.033	0.57

Chi-Square Comparisons

Variables	df	F	p
Ethnicity	2	1.73	0.42
Born in the USA	1	0.47	0.79
Language Spoken	2	0.83	0.65
Parity	5	2.24	0.81
Marital Status	4	6.02	0.20
Street Drug Use			
Religion	4	1.91	0.75
Household Income	9	9.96	0.35
Type of Health Insurance	2	0.67	0.72

Table 10 continued

ANOVA

INSTRUMENTS (Time 1)	df	F	p
Trait Anxiety	1	2.27	0.14
State Anxiety	1	0.56	0.46
ESCA	1	0.009	0.92
Sense of Coherence	1	0.94	0.33
MSSI	1	1.13	0.29

Table 11
Instrument Totals

	Mean	SD	Range
Exercise of Self-Care Agency			
Time 1			
Total (n=69) (Alpha=0.82)	118.25	18.92	(48.16-165.98)
TPCVSG (n=31)	113.52	18.92	(48.16-149.21)
APCVSG (n=38)	122.12	18.06	(83.85-165.98)
Time 2			
Total (n=71) (Alpha=0.85)	119.54	16.77	(86.86-157.81)
TPCVSG(n=32)	117.39	16.77	(91.16-157.81)
APCVSG (n=39)	121.26	16.77	(86.86-150.93)
Sense of Coherence			
Time 1			
Total (n=67) (Alpha=0.78)	3.55	0.61	(2.42-4.92)
TPCVSG(n=30)	3.54	0.63	(2.42-4.62)
APCVSG (n=37)	3.56	0.61	(2.46-4.92)
Time 2			
Total (n=73) (Alpha=0.76)	3.57	0.57	(2.31-4.77)
TPCVSG (n=34)	3.64	0.49	(2.38-4.54)
APCVSG (n=39)	3.51	0.64	(2.31-4.77)
Spielberger State/Trait Anxiety Instrument			
Trait			
Total (n=65) (Alpha=0.91)	40.6	10.6	(20-63)
TPCVSG (n=29)	40.4	11.8	(22-63)
APCVSG (n=36)	40.8	9.8	(20-53)
State			
Time 1			
Total (n=68) (Alpha=0.92)	39.4	11.4	(20-64)
TPCVSG (n=30)	39.6	11.8	(21-64)
APCVSG (n=38)	39.0	11.4	(30-64)

Table 11 continued

	Mean	SD	Range
State Anxiety			
Time 2			
Total (n=70) (Alpha=0.90)	37.60	9.4	(20-59)
TPCVSG (n=31)	38.20	8.4	(20-55)
APCVSG (n=39)	37.00	10.2	(20-59)
Maternal Social Support Index			
Time 1			
Total (n=48) (Alpha=0.64)	22.32	5.29	(9-31)
TPCVSG (n=19)	21.59	6.55	(9-29)
APCVSG (n=29)	22.80	4.34	(13-31)
Time 2			
Total (n=41) (Alpha=0.78)	21.28	6.28	(7-34)
TPCVSG (n=19)	19.56	6.86	(7-30.6)
APCVSG (n=22)	22.77	5.47	(14-34)
Patient Satisfaction with Prenatal Care Instrument			
Motivation Sub-scale			
Total (n=73) (Alpha=0.26)	2.23	0.78	(1.00-3.80)
TPCVSG (n=32)	2.28	0.76	(1.00-3.80)
APCVSG (n=41)	2.19	0.80	(1.00-3.75)
Expectation Sub-scale			
Total (n=71) (Alpha=0.73)	2.80	0.48	(1.26-3.79)
TPCVSG (n=33)	2.78	0.54	(1.26-3.78)
APCVSG (n=38)	2.81	0.43	(1.89-3.79)
Satisfaction with Provider Sub-scale			
Total (n=68) (Alpha=0.95)	1.77	0.51	(1.00-3.05)
TPCVSG (n=31)	1.93	0.57	(1.00-3.00)
APCVSG (n=37)	1.64	0.43	(1.00-2.55)

Table 11 continued

	Mean	SD	Range
Satisfaction with Staff Sub-scale			
Total (n=65) (Alpha=0.95)	1.75	0.53	(1.00-3.00)
TPCVSG (n=33)	1.84	0.57	(1.00-3.00)
APCVSG (n=34)	1.66	0.47	(1.00-2.55)
Satisfaction with Prenatal Care System Sub-scale			
Total (n=73) (Alpha=0.72)	2.03	0.48	(1.00-3.11)
TPCVSG (n=33)	2.16	0.47	(1.00-3.05)
APCVSG (n=40)	1.93	0.48	(1.00-3.11)

Table 12

Perinatal Outcomes for Entire Sample (N=81)

Variable	Mean	SD	Range
Infant Health:			
Gestational age at birth :	38.36	1.34	(34-42)
Birthweight (grams):	3427.25	420.42	(2680- 4880)
Ballard Score:		N	%
37 weeks		3	3.8
38 weeks		9	11.3
39 weeks		11	13.8
40 weeks		37	46.3
41 weeks		16	20
42 weeks		4	5.0
Five minute Apgar score (No scores less than 8):			
8		6	7.4
9		74	91.4
10		1	1.2
Number of inpatient hospital days immediately following birth :			
NICU:		76	93.8%
None		2	2.5%
One day		2	2.5%
Five days		1	1.2%
Nine days			
Newborn Nursery:		65	80.2%
None		7	8.6%
One		6	7.4%
Two		2	2.5%
Three		1	1.2%
Four			

Table 12 continued

Neonatal complications
(Neonates may have had more than one complication)

	N
Sepsis	1
Hyperbilirubinemia	2
Fetal intolerance to labor	0
Low birthweight	0
Respiratory Distress	3
Fetal Anomalies	1
Other: (Lung cyst and craniosynostosis, +RPR)	2

Maternal Health:	Mean	SD	Range
Age (in years) at birth of baby :	24.95	5.13	(18-40)
Average weekly weight gain (in pounds): (Last weight-First weight/ Weeks of Prenatal Care)	1.08	0.43	(-0.23-2.16)

Maternal Complications: (Women may have experienced more than one complication.)	N
Preterm Labor	4
Gestational Diabetes	0
Intrauterine Growth Retardation	1
Anemia (Hgb. <10) at 36 weeks of preg.	2
Recurrent Urinary Tract Infections	2
Pregnancy Induced Hypertension (PIH)	3
Placenta Previa	0
Placenta Abruptio	0
Fetal Anomalies	0
Multiple Gestation	0
Fetal malposition	3
Substance Abuse	1
Post Dates	4
Other (ie., R/O Pneumonia, CIN, Hyperemesis, +PPD, Pyelonephritis, Gonorrhea, +RPR)	14

Table 12 continued

Number of inpatient hospital days during pregnancy: (days spent in hospital at delivery):	
First Hospitalization :	
One day	6
Two days	8
Three days	3
Four days	0
Five days	2
Second Hospitalization:	0
Third Hospitalization:	0
Fourth or more Hospitalizations:	0

Intrapartum:

	N	%
Type of Birth:		
NSVD	75	92.6
C-section	3	3.7
Vacuum Extraction	3	3.7
Forceps	0	0
Primary provider attending birth*:		
CNM	61	75.3
Resident MD	17	21.0
Student Nurse-Midwife	0	0
Medical Student	1	1.2
RN	0	0
Other (Attending OB/GYN)	2	2.5
Transfered to hospital during labor:		
Yes	10	12.3
No	71	87.7

*Resident MDs and Attending OB/GYN providers attended deliveries at the UCI Medical Center (Hospital).

Table 12 continued

Reason(s) for intrapartum transfer:	N
Thick meconium stained amniotic fluid	1
Failure to progress	3
Ruptured membranes-Not in labor	1
Postpartum hemorrhage	0
Fetal malpresentation	1
Fetal intolerance to labor/ Non-reassuring FHR patterns	5
PIH	1
Febrile	2
Placenta previa	0
Placenta Abruptio	0
Other	0

Length of labor (minutes):	Mean	SD	Range
Active phase: (4-10cms)	269.19	152.94	25-680
Second Stage: (10cms-birth)	35.16	(48.25)	1-255
Hemoglobin (intrapartal):	12.10	1.39	9.10-15.30

	N	%
Medication (analgesia) use in labor:		
Yes	28	34.6
No	52	64.2
Warm water immersion used in labor :		
Yes	22	27.2
No	58	71.6
Prostin suppositories used in labor:		
Yes	10	12.3
No	69	85.2
Pitocin augmentation used in labor		
Yes	13	16.0
No	66	81.5

Table 13

Perinatal Outcomes by Study Group

Traditional Prenatal Care Visit Schedule Group (N=38)

Infant Health:	Mean	SD	Range
Gestational age at birth :	38.66	1.12	(36-40)
Birthweight (grams):	3506.92	400.75	(2761-4370)

Ballard Score	N	%
37 weeks	0	
38 weeks	3	8.1
39 weeks	6	16.2
40 weeks	20	54.1
41 weeks	6	16.2
42 weeks	2	5.4

Five minute Apgar Score (No scores less than 8)		
8	3	7.9
9	34	89.5
10	1	2.6

Number of inpatient hospital days immediately following birth :	N	%
NICU:		
None	37	97.4
One day	1	2.6
Newborn Nursery:		
None	28	73.7
One	4	10.5
Two	4	10.5
Three	1	2.6
Four	1	2.6

Table 13 continued

Neonatal complications: (Neonates may have had more than one complication)	N
Sepsis	0
Hyperbilirubinemia	1
Fetal intolerance to labor	0
Low birthweight	0
Respiratory Distress	0
Fetal Anomalies	0
Other fetal complications (+RPR)	1

Maternal Health:	Mean	SD	Range
Age	25.84	5.36	(19-40)
Average weekly weight gain (pounds): (Last weight-First weight/ Weeks of Prenatal Care)	1.13	0.42	(0.25-1.96)

	N	%
Transfer of care during pregnancy for medical/obstetrical reason:	5	13.2
Transfer of care during pregnancy due to maternal desire/wishes:	1	2.6

Maternal complications: (Women may have experienced more than one complication)	N
Preterm Labor	3
Gestational Diabetes	0
Intrauterine Growth Retardation	1
Anemia (Hgb. <10) at 36 weeks of preg.	1
Recurrent Urinary Tract Infections	1
Pregnancy Induced Hypertension (PIH)	1
Placenta Previa	0
Placenta Abruptio	0
Fetal Anomalies	0
Multiple Gestation	0
Fetal malposition	1
Substance Abuse	0
Post Dates	2
Other (ie. R/O Pneumonia, Hyperemesis, +PPD, +RPR)	6

Table 13 continued

Number of inpatient hospital days during pregnancy: (days spent in hospital at delivery):	
First Hospitalization :	
One day	3
Two days	5
Three days	1
Four	0
Five	2
Second Hospitalization:	0
Third Hospitalization:	0
Fourth or more Hospitalizations:	0

Intrapartum:	N	%
Type of Birth:		
NSVD	33	86.8
C-section	3	7.9
Vacuum Extraction	2	5.3
Forceps	0	0
Primary provider attending birth:		
CNM	28	73.7
Resident MD	8	21.1
Student Nurse-Midwife	0	0
Medical Student	1	2.6
RN	0	0
Other: Attending OB/GYN	1	2.6
Transfer to hospital during labor:		
Yes	5	13.2
No	33	86.8

Table 13 continued

Reason(s) for intrapartum transfer:	N
Thick meconium stained amniotic fluid	0
Failure to progress	2
Ruptured membranes-Not in labor	0
Postpartum hemorrhage	0
Fetal malpresentation	0
Fetal intolerance to labor/ Non-reassuring FHR patterns	3
PIH	0
Febrile	1
Placenta previa	0
Placenta Abruptio	0
Other	0

Length of labor (minutes):	Mean	SD	Range
Active phase: (4-10cms)	270.97	154.38	(25-615)
Second Stage: (10cms-birth)	35.94	63.56	(1-263)
Hemoglobin (intrapartal):	12.16	1.22	(9.9-14.10)

	N	%
Medication (analgesia) use in labor:		
Yes	12	31.6
No	26	68.4
Warm water immersion used in labor :		
Yes	12	31.6
No	26	68.4
Prostin suppositories used in labor:		
Yes	6	15.8
No	32	94.2
Pitocin augmentation used in labor:		
Yes	7	18.4
No	31	81.5

Table 14

Perinatal Outcomes by Study Group

Alternative Prenatal Care Visit Schedule Group (N=43)

Variable	Mean	SD	Range
Infant Health:			
Gestational age at birth :	38.09	1.46	(34-42)
Birthweight (grams):	3356.81	429.37	(2680-4880)
Ballard Score:		N	%
37 weeks		3	7.0
38 weeks		6	14.0
39 weeks		5	11.6
40 weeks		17	39.5
41 weeks		10	23.3
42 weeks		2	4.7
Five minute Apgar Score (No scores less than 8):			
8		3	7.0
9		40	93.0
Number of inpatient hospital days immediately following birth:		N	%
NICU:			
None		39	90.7
One day		1	2.3
Five days		2	4.7
Nine days		1	2.3
Newborn Nursery:			
None		37	86.1
One		3	7.0
Two		2	4.7
Three		1	2.3

Table 14 continued

Neonatal complications: (Neonates may have had more than one comp.)	N
Sepsis	1
Hyperbilirubinemia	1
Fetal intolerance to labor	0
Low birthweight	0
Respiratory Distress	3
Fetal Anomalies	1
Other (Lung cyst, Craniosynostosis):	1

Maternal Health:	Mean	SD	Range
Age (in years) at birth of baby :	24.16	4.84	(18-35)
Average weekly weight gain (pounds): (Last weight-First weight/ Weeks of Prenatal Care)	.03	0.43	(-0.23-2.16)

	N	%
Transfer of care during pregnancy for medical/obstetrical reason?	4	9.3
Transfer of care during pregnancy due to maternal desire/wishes?	0	0

Maternal complications: (Women may have experienced more than one comp.)	N
Preterm Labor	1
Gestational Diabetes	0
Intrauterine Growth Retardation	0
Anemia (Hgb. <10) at 36 weeks of preg.	1
Recurrent Urinary Tract Infections	1
Pregnancy Induced Hypertension (PIH)	2
Placenta Previa	0
Placenta Abruptio	0
Fetal Anomalies	0
Multiple Gestation	0
Fetal malposition	2
Substance Abuse	1
Post Dates	2
Other (ie., CIN, Pyelonephritis, Gonorrhea, +RPR)	8

Table 14 continued

Number of inpatient hospital days during pregnancy: (days spent in hospital at delivery):		
First Hospitalization :		
One day		3
Two days		3
Three days		2
Four days		0
Five days		0
Second Hospitalization:		0
Third Hospitalization:		0
Fourth or more Hospitalizations:		0

Intrapartum:

	N	%
Type of Birth:		
NSVD	42	97.7
C-section	0	0
Vacuum Extraction	1	2.3
Forceps	0	0
Primary provider attending birth:		
CNM	33	76.7
Resident MD	9	20.9
Student Nurse-Midwife	0	0
Medical Student	0	0
RN	0	0
Other:Attending OB/GYN	1	2.3
Transfer to hospital during labor:		
Yes	5	11.6
No	38	88.4

Table 14 continued

Reason(s) for intrapartal transfer:			
Thick meconium stained amniotic fluid			1
Failure to progress			1
Ruptured membranes-Not in labor			1
Postpartum hemorrhage			0
Fetal malpresentation			0
Fetal intolerance to labor/ Non-reassuring FHR patterns			2
PIH			1
Febrile			1
Placenta previa			0
Placenta Abruptio			0
Other			1
Length of labor (minutes):	Mean	SD	Range
Active phase: (4-10cms)	267.51	153.68	(40-680)
Second Stage: (10cms-birth)	34.50	31.06	(1-122)
Hemoglobin (intrapartal):	12.02	1.49	(9.10-15.30)
		N	%
Medication (analgesia) use in labor:			
Yes		16	37.2
No		27	62.8
Warm water immersion used in labor :			
Yes		10	23.3
No		33	76.7
Prostin suppositories used in labor:			
Yes		4	9.3
No		39	90.7
Pitocin augmentation used in labor:			
Yes		6	14.0
No		37	86.0

Table 15
ANOVA and Chi Square Analysis Comparing Perinatal Outcomes by Group
TPCVSG (n=43) APCVSG (n=38)

ANOVA

Variable	df	F	p
Infant Health:			
Gestational Age	1	3.52	0.06
Birthweight	1	2.63	0.11
Days in NICU	1	1.20	0.35
Days in Newborn Nursery	1	0.23	0.64
Maternal Health:			
Average weekly weight gain	1	0.94	0.34
Hospitalization Days	1	0.19	0.67
Intrapartum:			
Length of active labor	1	0.009	0.92
Length of second stage labor	1	0.030	0.86

Chi -Square Analysis

	df	F	p
Ballard Score	5	4.9	0.43
Antepartum Transfers	1	0.35	0.56
Intrapartum Transfers	1	0.06	0.80
Type of Birth	2	4.12	0.13
Type of Provider	3	1.30	0.73
Medication use in labor	1	0.56	0.46

Table 16
Neonatal and Maternal Complications
for Total Sample (N-81) and by Study Group

Neonatal complications (Neonates may have had more than one complication)	**TPCVSG (N=38)**	**APCVG (N=43)**	**Total (N=81)**
	N	N	N
Sepsis	0	1	1
Hyperbilirubinemia	1	1	2
Fetal intolerance to labor	0	0	0
Low birthweight	0	0	0
Respiratory Distress	0	3	3
Fetal Anomalies	0	1	1
Other: (Lung cyst and craniosynostosis, +RPR)	1	1	2

Maternal Complications: (Women may have experienced more than one complication.)	**TPCVSG**	**APCVSG**	**Total**
	N	N	N
Preterm Labor	3	1	4
Gestational Diabetes	0	0	0
IUGR	1	0	1
Anemia	1	1	2
Recurrent UTIs	1	1	2
PIH	1	2	3
Placenta Previa	0	0	0
Placenta Abruptio	0	0	0
Fetal Anomalies	0	0	0
Multiple Gestation	0	0	0
Fetal malposition	1	2	3
Substance Abuse	0	1	1
Post Dates	2	2	4
Other (ie., R/O Pneumonia, CIN, Hyperemesis, +PPD, Pyelonephritis, Gonorrhea, +RPR)	6	8	14

Table 17

Evaluation of Prenatal Care
/Adherence to Prenatal Visit Schedule (N=81)

	Mean	SD	Range
Number of regularly scheduled prenatal visits attended before birth:	9.16	2.53	3-16
Number of documented phone calls in chart:	0.50	0.82	0-4
Number of "no-show" prenatal visits:	0.27	0.57	0-2
Number of UCIBC Evaluation Room visits:	1.70	1.40	0-7
Number of unscheduled office visits:	0.16	0.46	0-3
Number of Emergency Room visits (other than at UCIBC):	0.06	0.24	0-1

Transfer of care to Birthing Center:	N	%
Yes	9	11.1
No	72	88.9

	Mean	SD	Range
Ultrasounds:	1.10	0.85	(0-3)

Prenatal Care Indices:

MSAFP at 15-20 weeks	N	%
Yes	59	72.8
No	22	27.2
Glucose Screen :		
Yes	79	97.5
No	2	2.5
Fetal Evaluation Testing:		
Yes	16	20.0
No	65	80.2

Table 17 continued

Anemia (1st trimester)		
Yes	7	8.6
No	74	91.4
Comprehensive Perinatal Services Program participant:		
Yes	50	61.7
No	31	38.3

Table 18

Evaluation of Prenatal Care
/Adherence to Prenatal Visit Schedule By Study Group
Traditional Prenatal Care Visit Schedule (N=38)

	Mean	SD	Range
Number of regularly scheduled prenatal visits attended before birth:	10.84	2.33	(6-16)
Number of documented phone calls in chart:	0.47	0.86	(0-4)
Number of "no-show" prenatal visits:	0.26	0.55	(0-2)
Number of UCIBC Evaluation Room visits:	1.76	1.55	(0-7)
Number of unscheduled office visits:	0.08	0 .27	(0-1)
Number of Emergency Room visits (other than at UCIBC):	0.03	0.16	(0-1)

Transfer of care to Birthing Center:	N	%
Yes	3	7.9
No	35	92.1

	Mean	SD	Range
Ultrasounds:	1.13	0.84	(0-3)

Prenatal Care Indices:

MSAFP at 15-20 weeks:	N	%
Yes	30	78.9
No	8	21.1

Glucose Screen :		
Yes	37	97.4
No	1	2.6

Table 18 continued

Fetal Evaluation Testing:	N	%
Yes	8	21.1
No	30	78.9
Anemia (1st trimester):		
Yes	5	13.2
No	33	86.8
Comprehensive Perinatal Services Program participant:		
Yes	25	65.8
No	13	34.2

Table 19

Evaluation of Prenatal Care
/Adherence to Prenatal Visit Schedule By Group
Alternative Prenatal Care Visit Schedule Group (N=43)

	Mean	SD	Range
Number of regularly scheduled prenatal visits attended before birth:	7.65	1.62	(3-11)
Number of documented phone calls in chart:	0.51	0.80	(0-3)
Number of "no-show" prenatal visits:	0.28	0.59	(0-2)
Number of UCIBC Evaluation Room visits:	1.65	1.27	(0-7)
Number of unscheduled office visits:	0.23	0.57	(0-3)
Number of Emergency Room visits (other than at UCIBC):	0.09	0.29	(0-1)

Transfer of care to Birthing Center:	N	%
Yes	6	14.0
No	37	86.0

	Mean	SD	Range
Ultrasounds:	1.07	0.86	(0-3)

Prenatal Care Indices:

MSAFP at 15-20 weeks	N	%
Yes	29	67.4
No	14	32.6
Glucose Screen :		
Yes	42	97.7
No	1	2.3

Table 19 continued

	N	%
Fetal Evaluation Testing:		
Yes	8	18.6
No	35	81.4
Anemia (1st trimester)		
Yes	2	4.7
No	41	95.3
Comprehensive Perinatal Services Program participant:		
Yes	25	58.1
No	18	41.9

Table 20
Comparison of Prenatal Care Data by Group
TPCVSG (n=43) APCVSG (n=38)
ANOVA

Variable	df	F	p
Number of Regularly Scheduled Prenatal Visits Attended	1	50.78	0.0001*
Number of Drop-in Visits	1	2.81	0.09
Number of Evaluation Room Visits	1	0.23	0.63
Number of Missed Visits	1	0.006	0.94
Number of Telephone Calls	1	0.07	0.79
Number of ER Visits	1	1.54	0.22
Number of Ultrasounds	1	0.11	0.75

*Statistically significant at p<0.0001 level.

Chi-Square Comparison by Group on Selected Variables

(Women who did not make any of the specified contacts were removed from each analysis.)

Variable	DF	F	p
Number of Drop-In Visits	1	2.72	0.09
Number of Evaluation Room Visits	1	1.015	0.31
Number of Missed Visits	1	0.000	0.99
Number of Telephone Calls	1	0.099	0.75
Number of Ultrasounds	2	0.009	0.995

Table 21

Confidence Intervals for Selected Outcome and Prenatal Care Variables

Variable	Estimated Difference in Means	95% Confidence Interval
Gestational Age (weeks)	-0.57	-1.14, +0.01
Birthweight (grams)	-150	-334, +34
Average Weight Gain (pounds/week)	-0.10	-0.29, +0.086
Number of Prenatal Visits Attended	3.1	2.24, 4.04

Variable	Estimated Difference in Proportions	95% Confidence Interval
Antepartum Transfers	-0.041	-0.18, +0.10
Intrapartum Transfers	-0.018	-0.17 +0.13

REFERENCES

Aleksandrowicz, M. & Aleksandrowicz, D. (1975). The molding of personality: A newborn's innate characteristics in interaction with parent's personalities. Child Psychiatry and Human Development, 5:77-81.

Alexander, G.R., & Cornely, D.A. (1987). Prenatal care utilization: Its measurement and relationship to pregnancy outcome. Am J Prev Med 3(5):243-253.

American Academy of Pediatrics and American College of Obstetricians and Gynecologists. (1988). Guidelines for Perinatal Care. 2nd Edition. Elk Grove Village, IL/Washington, DC.

American College of Nurse-Midwives. (1978). Definition of a Certified Nurse-Midwife. Washington DC: ACNM.

American College of Nurse-Midwives. (1983). Functions, standards and qualifications for nurse-midwifery practice. Journal of Nurse-Midwifery, 29(2): 170.

American College of Obstetricians and Gynecologists (1989). Standards for Obstetric-Gynecologic Services. Washington DC: ACOG.

American Nurses' Association. (1980). Nursing: A Social Policy Statement. Kansas City, MO: Author, p 5.

Antonovsky, A. (1987). Unraveling the Mystery of Health. San Francisco: Jossey-Bass.

Antonovsky, A. & Sagy, S. (1986). The development of a sense of coherence and its impact on responses to stress situations. Journal of Social Psychology, 126: 213-225.

Bailar, J.C.. & Mosteller, F. (1986). Medical Uses of Statistics. Waltham, MA: NEJM Books.

Baldwin, L., Raine, T., Jenkins, L.D., Hart, G. & Rosenblatt, R. (1994). Do providers adhere to ACOG standards? The case of prenatal care. Obstetrics and Gynecology, 84(4):549-555.

Bergstrom-Walan, J. (1963). Efficacy of education in childbirth. Journal of Psychosomatic Research, 7: 131-143.

Binstock, M., Thompson, D., Wolde-Tsadik, G. (1992). Alternative prenatal care: The impact of reduced visit frequency, focused visits, and continuity of care. Paper presented at the 36th Annual T. Hart Baker, MD OB/GYN Symposium, Anaheim, CA. April 3.

Borgsteadt, A. & Rosen, M. (1968). Medication during labor correlated with behavior and EEG of the newborn. American Journal of Diseases in Children, 115: 21-24.

Brazelton, T.B. (1961). Psychophysiologic reactions in the neonate. Journal of Pediatrics, 58:513-518.

Brazelton, T.B., Koslowski, B. & Main, M. (1974). The origins of reciprocity: The early mother-infant interaction. In M. Lewis & L. Rosenblum, (Eds.) The Effects of the Infant on Its Caregiver. New York: John Wiley.

Brown, S. S. (1988). Prenatal Care: Reaching Mothers, Reaching Infants. Washington, DC: National Academy Press.

Brucker, M.C., & Mueller, M. (1985). Nurse-midwifery care of adolescents. Journal of Nurse-Midwifery, 30: 277-279.

Burstein, I., Kinch, R., & Stern, L. (1974). Anxiety, pregnancy, labor, and the neonate. American Journal of Obstetrics and Gynecology, 118: 195-197.

Burns, N. & Grove, S.K. (1987). The Practice of Nursing Research. Philadelphia:W.B. Saunders.

Cavero, C.M., Fullerton, J.T. & Bartlome, J.A. (1991). Assessment of the process and outcomes of the first 1,000 births of a nurse-midwifery service. Journal of Nurse-Midwifery, 36(2); 104-110.

Chang, B., Uman, G., & Linn, L. (1985). Adherence to health care regimes among elderly women. Nursing Research, 34: 27-31.

Christison-Lagay, J., & Crabtree, R. (1986). Barriers affecting entry into prenatal care: A study of adolescents under 18 in Hanford, Connecticut. Unpublished manuscript.

Cogan, R. (1980). The effects of childbirth preparation. Clinical Obstetrics and Gynecology, 23:1-14.

Collins, J.W. & Shay, D.K. (1994). Prevalence of low birth weight among Hispanic infants with United States-born and foreign-born mothers: The effect of urban poverty. American Journal of Epidemiology, 139:2 184-192.

Conlon, M. & Anderson, G.C. (1990). Three methods of random assignment: Comparison of balance achieved on potentially confounding variables. Nursing Research, 39(6): 376-379.

Cranely, M., Hedahl, M. & Pegg, S. (1983). Women's perceptions of vaginal and cesarean deliveries. Nursing Research, 32:10-15.

Cronewett, L. & Newmark, L. (1974). Father's response to childbirth. Nursing Research, 22: 210-217.

Curry, M. (1989). Nonfinancial barriers to prenatal care. Women & Health, 15(3): 85-99.

Doering, S. & Entwisle, D. (1975). Preparation during pregnancy and ability to cope with labor and delivery. American Journal of Orthopsychiatry, 45: 825-837.

Donaldson, P.J. & Billy, J.O.G. (1984). The impact of prenatal care on birth weight. Medical Care, 22(2):177-188.

Dott, A.B., & Fort, A.T. (1975). The effect of availability and utilization of prenatal care and hospital services on infant mortality rates. Am J Obstet Gynecol, 123(8):854-860.

Enderlein, M.C., Stephenson, P.A., Holt,V.L. & Hickok, D. (1994). Health status and timing of onset of prenatal care: Is there an assosciation among low-income women? Birth, 21(2): 71-76.

Enkin, M. W. (1992). Randomized controlled trials in the evaluation of antenatal care. International Journal of Technology Assessment in Health Care, 8(1):40-45.

Enkin, M. & Chalmers, I. (1982). Effectiveness and satisfaction in antenatal care, in Effectiveness and Satisfaction in Antenatal Care, Enkin, M. and Chalmers, I. (Eds.) London: Spastics International.

Enkin, M., Smith, S., Dermer, S., & Emmett, J. (1972). An adequately controlled study of the effectiveness of PPM training. In N. Morris (Ed.), Psychosomatic Medicine in Obstetrics and Gynecology. London: Basil, Steiner.

Expert Panel on the Content of Prenatal Care. (1989). Caring for our Future: The Content of Prenatal Care. Washington, DC: Public Health Service.

Faundes, A., Hardy, E., & Diaz, J. (1982). Year of schooling with association of marital status and year of schooling with perinatal outcome: The influence of prenatal care as an intermediate variable. Journal of Perinatal Medicine, 10: 105-112.

Felton, G.S. & Segelman, F.B. (1978). Lamaze childbirth training and changes in belief about personal control. Birth and the Family Journal, 3:141-144.

Gantz, S.B. (1990). Self-care: Perspectives from six disciplines. Holistic Nurse Practitioners , 4(2):1-12.

Gast, H.L., Deneyes, M.J., Campbell, J.C., Hartweg, D.L., Schott-Baer, D., & Isenberg, M. (1989). Self-care agency: Conceptualizations and operationalizations. Advances in Nursing Science 12(1): 26-38.

Gordis, L., Kleinman, J.C., Klerman, L.V., Mullen, P.D. & Paneth, N. (1990). Criteria for evaluating evidence regarding the effectiveness of prenatal interventions. In: New Perspectives on Prenatal Care. Merkatz, I.R. & Thompson, J.E. (Eds.) New York: Elsevier, 31-38.

Gortmaker, S.L. (1979). The effects of prenatal care upon the health of the newborn. Am J Public Health, 69(7):653-660.

Gough, H.G. & Heilbrun, A.B. (1965). The Adjective Check List Manual. Palo Alto: Consulting Psychologists Press.

Greenberg, R. (1983). Impact of prenatal care in different social groups. American Journal of Obstetrics and Gynecology, 145: 797-801.

Guendelman, S., Gould, J., Hudes, M. (1990). Generational differences in perinatal health among the Mexican American population; Findings from HHANES 1982-1984. American Journal of Public Health, 80:61-65.

Guilkey, D., Popkin, B., Akin, J. & Wong, E. (1987). Prenatal care and pregnancy outcome in the Phillipines. Journal of Development Economics,

Haire, D. (1981). Improving the outcome of pregnancy through increased utilization of midwives. Journal of Nurse-Midwifery, 26: 5-8.

Hall, M.H. (1991). What are the benefits of prenatal care in uncomplicated pregnancy? Birth 18:3 151-152.

Harper, D. (1984). Application of Orem's theoretical constructs to self-care medication behavior in the elderly. Advances in Nursing Science, 6(3):.29-46.

Harris, J.K. (1980). Self-care is possible after cesarean delivery. Nursing Clinics of North America 15(1): 191-205.

Heins, H.C., Nance, N.W., McCarthy, B.J. & Efird, C.M. (1990). A randomized trial of nurse-midwifery prenatal care to reduce low birth weight. Obstetrics & Gynecology, 75(3): 341-345.

Henderson, V. (1964). The nature of nursing. American Journal of Nursing, 64(6): 62-68.

Henneborn, W., & Cogan, R. (1975). The effect of husband participation on reported pain and probability of medication during labor and birth. Journal of Psychosomatic Research, 19: 215-222.

Herzog, E. & Bernstein, R. (1964). Health Services for Unmarried Mothers. (Children's Bureau Pub. No. 425-1964). Washington, DC: U.S. Department of Health, Education, and Welfare Administration.

Hill, L. & Smith N. (1990). Self-Care Nursing: Promotion of Health. Norwalk, Connecticut: Appleton & Lange.

Hughey, M., McElin, T. & Young, T. (1978). Maternal and fetal outcomes of Lamaze-prepared patients. Obstetrics and Gynecology, 51:643-646.

Hulsey, T.C., Patrick, C.H., Alexander, G.R. & Ebeling, M. (1991). Prenatal care and prematurity: Is there an association in uncomplicated pregnancies? Birth,18(3):146-150.

Huttel, F., Mitchell, W., Fischer, W., & Meyer, A. (1972). A quantitative evaluation of psychoprophylaxia in childbirth. Journal of Psychosomatic Research, 16: 81-92.

Institute of Medicine. (1982). Research Issues in the Assssment of Birth Settings. Washington DC: National Academy Press.

Institute of Medicine. (1988). Prenatal Care: Reaching Mothers, Reaching Infants. Washington DC: National Academy Press.

Institute of Medicine, Committee to Reduce Low Birthweight. (1985). Preventing Low Birthweight. Washington DC: National Academy Press.

Kahn, R.L. (1979). Aging and social support. In M.W. Riley (Ed.) Aging from Birth to Death: Interdisciplinary Perspectives. Boulder, CO: Westview Press.

Kay, B.J., Share, D.A., Jones, K., Smith, M., Garcia, D. & Yeo, S.A. (1991). Process, costs, and outcomes of community-based prenatal care for adolescents. Medical Care, 29(6):531-542.

Kearney, B.Y. & Fleischer, B.J. (1979). Development of an instrument to measure self-care agency. Research in Nursing and Health, 2:25-34.

Keleher, K.C. & Mann, L.I. (1986). Nurse-midwifery care in an academic health center. Journal of Obstetric and Gynecologic Nursing, 15: 369-372.

Kessner, D.M., Singer, J. & Kalk, C.W. (1973). Infant death: An analysis by maternal risk and health care. In: Contrasts in Health Status, Vol. I. Washington DC: Institute of Medicine, National Academy of Sciences.

Kiely, M. (1991). Reproductive and Perinatal Epidemiology. Boca Raton, Florida: CRC Press, Inc.

Klein, L, & Goldenberg, R.L. (1990). Prenatal care and its effect on preterm birth and low birth weight. In New Perspective on Prenatal Care. Merkatz, I.R. & Thompson, J.E. (Eds.) New York: Elsevier 501-525.

Klerman, L.V. (1989). The need for a new perspective on prenatal care. In New Perspectives on Prenatal Care. Merkatz, I.R. & Thompson, J.E. (Eds.) New York: Elsevier 3-8.

Knoll, K. (1990). Prenatal care providers. In New Perspectives on Prenatal Care. Merkatz, I.R. & Thompson, J.E. (Eds.) New York: Elsevier 621-623.

Korner, A. (1971). Individual differences at birth; Implications for early experience and later development. American Journal of Orthopsychiatry, 41: 608-619.

Kotelchuck, M. (1987). The mismeasurement of prenatal care adequacy in the U.S. and a proposed alternative two-part index. Paper presented at the annual meeting of the American Public Health Association, New Orleans, LA, Oct. 18-22.

Kron, R., Stein, F., & Goddard, M. (1966). Newborn sucking behavior affected by obstetric sedation. Pediatrics, 37:1012-1016.

Laird, M., & Hogan, M. (1956). An elective program on preparation for childbirth at the Sloan Hospital for Women: May, 1951 to June 1953. American Journal of Obstetrics & Gynecology, 72:641-647.

Leatherman, J., Blackburn, D., & Davidhizar, R. (1990). How postpartum women explain their lack of obtaining adequate prenatal care. Journal of Advanced Nursing, 15: 256-267.

Lederman, R.P. (1984). Psychosocial Adaptation in Pregnancy. Englewood Cliffs, NJ: Prentice-Hall.

Lehrman, E. (1981). Nurse-midwifery practice: A descriptive study of prenatal care. Journal of Nurse-Midwifery, 26: 27-41.

Levin, L, Katz, A., & Holst, E. (1976). Self-Care: Lay Initiatives in Health. Provost, NY.

Levin, L.S. (1980). Power to the patient: A conversation with Lowell Levin. In Ferguson, T. (Ed.) Medical Self-Care. New York: Summit Books.

Liberatos, P., & Kiely, J.L. (1991). Selected issues in the evaluation of prenatal care, in Reproductive and Perinatal Epidemiology. Kiely, M. (Ed.) Boston, MA: CRC Press 79-95.

Lindmark, G. (1992). Assessing the scientific basis of antenatal care: The case of Sweden. International Journal of Technology Assessment in Health Care, 8(1):2-7.

Marut, J. & Mercer, R. (1979). Comparison of primiparas' perception of vaginal and cesarean birth. Nursing Research, 20:260-266.

McCormick, M.C. (1985). The contribution of low birth weight to infant mortality and childhood morbidity. New England Journal of Medicine, 312: 82-90.

McLaughlin, F.J., Altemeier, W.A., Christensen, M.J., Sherrod, K.B., Dietrich, M.S. & Stem, D.T. (1992). Randomized trial of comprehensive prenatal care for low-income women; effect on infant birth weight. Pediatrics, 89(1): 128-132.

Miller, C.A. (1988). Prenatal care outreach: An international perspective, in Prenatal Care: Reaching Mothers, Reaching Infants, Brown, S.S. (Ed.) Washington DC: National Academy Press.

Moore, P. & Hepworth, J.T. (1994). Use of perinatal and infant health services by Mexican-American medicaid enrollees. JAMA, 272(4): 297-304.

Moore, T.R., Origel, W., Key, T.C. & Resnik, R. (1986). The perinatal and economic impact of prenatal care in a low-socioeconomic population. Am J Obstet Gynecol, 154(1):29-33.

Nagey, D.A. (1989). The content of prenatal care. Obstetrics and Gynecology, 74 (3): 516-528.

National Center for Health Statistics (1980). Office visits by women: The national ambulatory medical care survey. Prepared by BK Cypress. Vital and Health Statistics, Series 13, No. 45 DHHS No. (PHS) 80-1976. Public Health Service. Washington, DC.

National Center for Health Statistics (1988). Births, marriages, divorces and deaths for 1987. Monthly Vital Statistics Report.

Norbeck, J.S., Lindsey, A.M., & Carrieri, V.L. (1981). The development of an instrument to measure social support. Nursing Research, 30: 264-269.

Norbeck, J.S., Lindsey, A.M., & Carrieri, V.L. (1983). Further development of the Norbeck Social Support Questionnaire Normative data and validity testing. Nursing Research,32: 4-9.

Nunnally, D. & Aguira, M. (1974). Patients' evaluation of their prenatal and delivery care. Nursing Research,23:469-474.

Nyamathi, A. M. (1991). Relationship of resources to emotional distress, somatic complaints, and high-risk behaviors in drug recovery and homeless minority women. Research in Nursing & Health, 14: 269-277.

Oakley, A. (1982). The relevance of the history of medicine to an understanding of current change: Some comments from the domain of prenatal care. Social Science and Medicine, 16:667-674.

Omar, M. & Schiffman, R. (1992). Patient Satisfaction with Prenatal Care Instrument, Michigan State University, East Lansing, Michigan.

Omar, M. & Schiffman, R. (1994). Impact of pregnat women's expectations and satisfaction with prenatal care on practice, service, and policy. Paper presented at AWHONN Annual Meeting, Cincinnati, OH, June.

Orem, D. (1980). Nursing: Concepts of practice. New York: McGraw-Hill.

Orem, D. (1985). Nursing: Concepts of Practice (3rd edition). New York: McGraw-Hill.

Parke, R., & Sawin, D. (1976). The father's role in infancy. Family Coordinator, 25:365-371.

Pascoe, J.M., Chessare, J., Baugh, E., Urich, L., & Ialongo, N. (1987). Help with prenatal household tasks and newborn birth weight: Is there an association? Developmental and Behavioral Pediatrics, 8(4): 207-212.

Pascoe, J.M. & Earp, J.A. (1984). The effects of mothers' social support and life changes on the stimulation of their children in the home. American Journal of Publilc Health, 74(4):358-360.

Pascoe, J.M. & French, J. (1990). The reliability and validity of the Maternal Social Support Index for primaparous mothers: A brief report. Family Medicine, 22(3):228-230.

Pascoe, J. M., Ialongo, N.S., Horn, W.F., Reinhart, M.A. & Perradatto, D. (1988). The reliability and validity of the Maternal Social Support Index. Family Medicine, 20(4):271-276.

Patterson, E.T., Freese, M.P. & Goldenberg, R.L. (1990). Seeking safe passage: Utilizing Health care during pregnancy. Image: Journal of Nursing Scholarship, 22(1):27-31.

Piechnick, S.L. & Corbett, M.A. (1985). Reducing low birth weight among socioeconomically high risk adolescent pregnancies. Journal of Nurse-Midwifery, 30: 88-98.

Poland, M., Ager, J., & Olson, J. (1987). Barriers to receiving adequate prenatal care. American Journal of Obstetrics and Gynecology, 157: 297-303.

Quick, J.D., Greenlick, M.R., 7 Roughman, K.J. (1981). Prenatal care and pregnancy outcome in an HMO and general population: A multivariate cohort analysis. American Journal of Public Health, 71(4):381-390.

Riesch, S.K. (1988). Changes in the exercise of self-care agency. Western Journal of Nursing Research, 10(3):257-273.

Roberts, S.J. & Krouse, H.J. (1990). Negotiation as a strategy to empower self-care. Holistic Nurse Practitioner, 4(2):30-36.

Roberts, S.J. & Krouse, H.J. (1988). Enhancing self-care through active negotiation. The Nurse Practitioner, 13(8): 44-52.

Rotter, J.B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80(1)Whole No. 609).

Rourke, A.M. (1991). Self-care: Chore or challenge? Journal of Advanced Nursing, 16:233-241.

Sakala, C. (1993). Midwifery care and out-of-hospital birth settings: How do they reduce unnecessary cesarean section births? Social Science and Medicine, 37(10): 1233-1250.

Salk, L. (1970). The critical nature of the post-partum period in the human for the establishment of the mother-infant bond: A controlled study. Diseases of the Nervous System, 31: 110-116.

Scott, J. & Rose, N. (1976). Effects of psychoprophylaxis (Lamaze preparation) on labor and delivery in primiparas. New England Journal of Medicine, 294: 1205-1208.

Scribner, R. & Dwyer, J. (1989). Acculturation and low birthweight among Latinos in the Hispanic HANES. American Journal of Public Health, 79: 1263-7.

Scupholme, A. (1982). Nurse-midwives and physicians: A team approach to obstetrical care in a perinatal center. Journal of Nurse-Midwifery, 27: 21-27.

Sharp, E.S. & Lewis, L.E. (1984). A decade of nurse-midwifery practice in a tertiary university-affiliated hospital. Journal of Nurse-Midwifery, 29: 353-365.

Showstack, J.A., Budetti, P.P. & Minkler, D. (1984). Factors associated with birthweight: An exploration of the roles of prenatal care and length of gestation. Am J Pub Hlth 74(9):1003-1008.

Simonton, O.C., Matthews-Simonton, S., & Creighton, J. (1978). Getting Well Again. Tarcher, Inc.: Los Angeles, CA.

Slome, C., Wehterbee, H., Daly, M., Christensen, K., Meglen, M., & Thiede, H. (1976). Effectiveness of CNMs: A prospective evaluation study. American Journal of Obstetrics and Gynecology, 124: 177-182.

Sosa, R., Kennell, J., Klaus, M., Robertson, S., & Urrutia, J. (1980). The effect of a supportive companion on perinatal problems, length of labor, and mother-infant interaction. New England Journal of Medicine, 303: 598-600.

Speert, H. (1980). Prenatal Care. In Obstetrics and Gynecology in America: A History, Chapter 12, 142-145.

Spielberger, C.D., Gorsuch, R.L., Lushene, R.E. (1980). Manual for the State-Trait Anxiety Inventory. Consulting Psychologists Press: Palo Alto, CA.

Standley, K., Soule, B., & Copans, S.A. (1979). Dimensions of prenatal anxiety and their influence on pregnancy outcome. American Journal of Obstetrics & Gynecology, 135: 22-26.

Stechler, G. (1964). Newborn attention was affected by medication during labor. Science, 144:315-317.

Steiger, N.J. & Lipson, J. G. (1985). Self-care Nursing: Theory and Practice. Bowie, MD: Prentice-Hall.

Stevens, A. (1920). The public health nurse and the extension of maternity nursing. Public Health Nursing, 12:497.

Stewart, R.B. & Clark, L. (1982). Nurse-midwifery practice in an in-hospital birthing center. Journal of Nurse-Midwifery, 27: 21-26.

Stickle, G., & Ma, P. (1977). Some social and medical correlates of pregnancy outcome. Am J Obstet Gynecol, 127(2):162-166.

Tanzer, D. (1972). Why Natural Childbirth? New York: Schocken.

Timm, M. (1979). Prenatal education evaluation. Nursing Research, 78: 338-542.

Thompson, J.E., Walsh, L.V. & Merkatz, I.R. (1990). The history of prenatal care: Cultural social and medical contexts, in New Perspectives on Prenatal Care. Merkatz, I.R. & Thompson, J.E. (Eds.) New York: Elsevier.

Tyson, J, Guzick, D., Rosenfeld, C.R., Lasky, R., Gant, N., Jiminez, J. & Heartwell, S. (1990). Prenatal care evaluation and cohort analyses. Pediatrics, 85:2195-2204.

US Congress, Office of Technology Assessment. (1986). Nurse Practitioners, Physician Assistants, and Certified Nurse-Midwives: A Policy Analysis. OTA-HCAS-37. Washington, DC: US Government Printing Office.

US Department of Health and Human Services (1989). Caring for our Future: The Content of Prenatal Care. Washington DC: Public Health Service, Dept. of Health and Human Services.

Van Aukin, W.B.D. & Tomlinson, D.R. (1953). An appraisal of patient training for childbirth. American Journal of Obstetrics & Gynecology, 66: 100-112.

Ventura, S. & Taffel, S. (1985). Childbearing characteristics of US-born and foreign-born Hispanic mothers. Public Health Report, 100:647-652.

Wallace, H.M. (1988). Infant mortality, in Maternal and Child Health Practices,Wallace, H.M., Ryan, G. & Oglesby, A.C. (Eds.) Oakland, CA: Third Party Publishing Co.

Wegeman, M.E. (1993). Annual summary of vital statistics-1992. Pediatrics, 92(6): 743-54.

Whitley, N. (1979). A comparison of prepared childbirth couples and conventional prenatal class couples. Journal of Obstetrical, Gynecological, and Neonatal Nursing, 8: 109-112.

Williams, D. M. (1990). Political theory and individualistic health promotion. Advances in Nursing Science, 12(1):14-25.

Williamson, H., LeFevre, M. & Hector, M. (1989). Association between life stress and serious perinatal complications. Journal of Family Practice, 29:489-494.

Williamson, J.D., & Danaher, K. (1978). Self-Care in Health. Croom Helm: London.

World Health Organization. Regional Office for Europe. (1985). Having a Baby in Europe. Copenhagen, Denmark: World Health Organization.