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Stress, self-esteem and racism as factors associated with low birth weight and preterm delivery in African-American childbearing women

Author
Green, Nanny L.

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STRESS, SELF-ESTEEM AND RACISM AS FACTORS ASSOCIATED WITH LOW BIRTH WEIGHT AND PRETERM DELIVERY IN AFRICAN-AMERICAN CHILDBEARING WOMEN

by

NANNY L. GREEN

DISSERTATION

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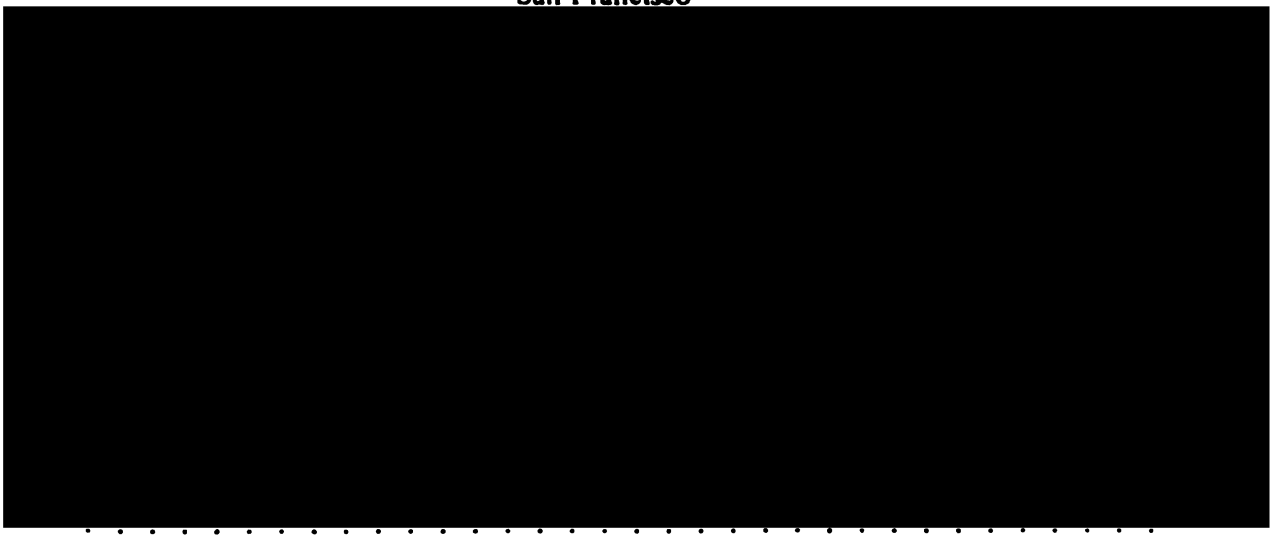

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STRESS, SELF-ESTEEM AND RACISM AS FACTORS ASSOCIATED WITH LOW BIRTH WEIGHT AND PRETERM DELIVERY IN AFRICAN-AMERICAN CHILDBEARING WOMEN

Nanny L. Green

University of California, San Francisco

DEDICATION

To my husband, Samuel Marlo Green

To my parents, Edward and Laura Murrell

To my children, Nandi Bowe Melhuish, Che-Malik and Kaipukire Bowe and Aubrey Green

To my brothers and sisters in Africa and the Diaspora

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STRESS, SELF-ESTEEM AND RACISM AS FACTORS ASSOCIATED WITH LOW BIRTH WEIGHT AND PRETERM DELIVERY IN AFRICAN-AMERICAN CHILDBEARING WOMEN

Nanny L. Green

ABSTRACT

African-American babies in the United States are dying at twice the rate of white babies. Despite advances in health and technology, this nation ranked twenty-first in worldwide infant mortality rates. The two-fold disparity between African-American and white low birth weight rates was the critical factor in this nation's poor ranking. Despite a myriad of studies, racial differences in low birth weight rates remain unexplained. In an attempt to identify contributing factors, this study investigated three variables. Stress, self-esteem and racism were hypothesized as having relationships with low birth weight and preterm delivery in African-American childbearing woman.

A convenience sample of nulliparous, African-American women (N=165) were interviewed in the low risk prenatal clinic of a California bay area HMO. The final sample consisted of 136 women, mean age of 24 years, mean years of education of 13.5, median total family monthly income from $1,501 to $2,000, 35% married and 65% unmarried. Stress was measured by Lazarus and Folkman's Daily Hassles Scale. Self-esteem was assessed by the Rosenberg Self-Esteem Scale. Racism was assessed by the Perceptions of Racism Scale, an instrument developed by the investigator and piloted on a sample of women (N=117).

The initial hierarchical multiple regression analyses did not support the relationships of stress, racism and self-esteem with the birth weight

and gestational age of the newborn at delivery. The next multiple regression supported a positive relationship of racism with stress ($p<.01$). The next multiple regression supported a negative relationship of self-esteem with stress ($p<.001$). The final hierarchical multiple regression did not support the hypothesized negative relationship of racism to self-esteem. Though the social-political variables of stress, self-esteem and racism did not demonstrate relationships with birth weight or gestational age of the newborn they did demonstrate significant interrelationships. Aggressive research and interventions are crucial to identify factors associated with the two-fold disparity between African-American and white low birth weight, preterm delivery, and the resultant infant mortality.

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CHAPTER ONE

THE STUDY PROBLEM

Introduction

There is a state of siege in North America. Mothers and babies ought not to die unless it is wartime. Yet, in the United States, African-American babies are dying. And they are dying at twice the rate of white babies (Binkin, Rust, & Williams, 1988; Johnson, 1987). Despite advances in health and technology, this nation ranked twenty-first in worldwide infant mortality rates (United Nations, 1990). The two-fold disparity between African-American and white infant mortality was the critical factor in this nation's poor ranking. This excessive African-American infant mortality is tantamount to genocide, a grave indictment.

Low birth weight is a primary determinant of infant mortality (Institute of Medicine, 1985). Low birth weight rates for African-American families are twice the rates for white families (Bureau of Maternal and Child Health and Resources Development, 1988; Department of Health Services, Health and Welfare Agency, State of California, 1990; Institute of Medicine, 1985; U.S. Department of Health, Education and Welfare, 1978). The high African-American low birth weight rate is a precursor to the high infant mortality rate (Baldwin, 1986; Institute of Medicine, 1985; Kleinman & Kessel; 1987). And, the gap between African-Americans and whites is widening (Kleinman & Kessel, 1987). Low birth weight and infant mortality literature is abundant. Despite a myriad of studies, racial differences in low birth weight and the resultant infant mortality remain unexplained.

Epidemiological studies comprise the dominant literature, and consist of data analyzed from birth records and other vital statistics. Age, race, income, education, marital status, medical and obstetrical conditions were among the variables investigated (Gould & Leroy, 1988; Kessel, Villar, Berendes, & Nugent, 1984; Klebanoff & Yip, 1987). Although relationships between these variables and low birth weight were demonstrated, they did not account for the dramatic differential between African-American and white low birth weight rates. Baldwin (1986) questioned whether consideration of income and education was adequate:

> Does a college education give a black woman the same access to health care resources as to a white woman? Does the same income buy the same level of living and safety of environment for whites as blacks? (p. 88)

The lives and experiences of African-Americans living in the United States are not equivalent with the lives and the experiences of whites. In education, employment, housing, and health, in virtually every aspect of life, African-Americans are disenfranchised (Billingsley, 1988; Conrad & Kern, 1986). It is vital to investigate factors relating to this inequality that potentially affect birth outcome.

Statement of the Problem

This study will examine three factors, stress, self-esteem and racism to ascertain their relationships with low birth weight and preterm delivery in a sample of African-American childbearing women. The purpose of this study is to contribute knowledge related to the disparity in African-American low birth weight and preterm delivery. Three specific objectives are:

1) to determine the relationships of three factors, stress, self-esteem and racism with low birth weight and preterm delivery in a sample of African-American childbearing women.

2) to develop a conceptual model that will test theoretically predicted relationships among stress, self-esteem and racism with low birth weight and preterm delivery in African-American childbearing women.

3) to identify mechanisms related to differential low birth weight/preterm delivery rates in African-American families that target intervention in this critical health care arena.

Four hypotheses tested were:

1) Stress and racism will be negatively related and self-esteem will be positively related to birth weight and gestational age of the newborn after the effects of the demographic variables (age, income, education, marital status, weeks gestation at the time of the interview) have been accounted for.

2) Racism will be positively related to stress after the effects of the demographic variables have been accounted for.

3) Self-esteem will be negatively related to stress after the effects of the demographic variables have been accounted for.

4) Racism will be negatively related to self-esteem after the effects of the demographic variables have been accounted for.

Significance of the Problem

Low birth weight and preterm delivery are determinants of infant mortality and markers of a peoples health. They weigh heavily in local, national and international arenas (Gould & Leroy, 1988; Institute of

Medicine, 1985; Yankauer, 1990). In the United States, solutions to the disparity between low birth weight rates in African-American and white families are critical. Many economic, political, social, physiological and psychological factors are potential contributors. Multiple variables have been studied (Miller & Jekel, 1987; Shino, Klebanoff, Graubard, Berendes, & Rhoads, 1986). Despite numerous studies and selected local and national intervention, the disparity in low birth weight rates remains.

Low birth weight can result from three pregnancy outcomes, preterm delivery, intrauterine growth retardation or a combination of both (Institute of Medicine, 1985). Although the causes of preterm delivery and intrauterine growth retardation are not fully understood, specific factors have been identified as increasing the risk of a low birth weight infant (Institute of Medicine, 1985). The Institute of Medicine (p. 15) categorizes these risk factors into six groups: 1) demographic risks (as age, poverty); 2) medical risks relating to pregnancy (as poor obstetric history, selected diseases); 3) medical risks in current pregnancy (as selected infections, preeclampsia); 4) behavioral and environmental risks (as smoking, exposure to toxic substances); 5) health care risks (as absent or inadequate prenatal care); and 6) evolving concepts of risk (as stress, events triggering uterine irritability). Studies of low birth weight and preterm delivery concluded that even when specific risk factors were accounted for, a disparity remained between African-American and white low birth weight rates. The literature produced abundant documentation but incomplete causal findings. This study addressed a segment of these voids.

The concepts of low birth weight and preterm delivery are both separate and intertwined. The former defines the weight of the baby at birth; the latter describes the period of gestational development. Low birth weight is a weight of less than 2,500 grams (5 1/2 pounds) at birth; preterm delivery is delivery prior to 37 weeks from the first day of the last menstrual period. Low birth weight is a major determinant of infant mortality, a risk which increases as the birth weight decreases (Institute of Medicine, 1985). In addition, low birth weight increases the risk of neonatal morbidity (Institute of Medicine, 1985). This increased morbidity presents as developmental handicaps, congenital anomalies, learning disorders, increased susceptibility to infection and translates as a greater economic and social burden for the family, the health care system and the nation (Institute of Medicine, 1985).

In Western society in the 19th century, weighing of infants at birth was used to assess nutrition and growth (Cone, 1961). In 1930, 2,500 grams was targeted as the weight below which infants were at increased risk (Rooth, 1980). The World Health Organization formally adopted this recommendation in 1948 and 1950 citing maturity as 2,500 grams (5 1/2 pounds) or thirty-seven weeks gestation. The weight and gestational age issue is complex as some full term infants weigh less than 2,500 grams. In 1961 the issue was clarified by the WHO Expert Committee on Maternal and Child Health. Prematurity was defined as those infants born before 37 weeks from the first day of the last menstrual period. Newborns weighing less than 2,500 grams were considered low birth weight. It is possible for an infant to be: 1) full term and low birth weight (after 37 weeks and less than 2,500 grams); 2) premature only (prior to 37 weeks with birth weight over 2,500 grams; and 3) premature and low birth weight (prior to

37 weeks and less than 2,500 grams). The implications of this variability affects the prenatal and postnatal management and the subsequent morbidity and mortality of the infant.

In the past 20 years, there has been a decline in neonatal mortality in the United States (Bureau of Maternal and Child Health and Resources Development, 1988). The decline for African-Americans and whites is not equivalent. In 1985 the Institute of Medicine stated:

> Infants born to blacks are twice as likely to weigh 2,500 grams or less than those born to whites (12.7 percent versus 5.0 percent)...parallel to this difference in birthweight distribution is a difference in infant mortality...Between 1977 and 1979...black births accounted for 16.5 percent of all live births in this period, but for 30 percent of all low birthweight births, 34 percent of very low birthweight births, and 28 percent of infant deaths. (p. 27)

Infant mortality and low birth weight rates in the United States are higher when compared with other technological nations (United Nations, 1990). A key factor in higher United States rates is the dramatically higher African-American rates (Binkin, Rust, & Williams, 1988). Thus, reductions in infant mortality are contingent on reductions in low birth weight and preterm delivery.

The dependent variables of the study, birth weight and gestational age of the newborn are critical measures for improved birth outcomes.

Overview of the Study Independent Variables

In this study, stress, self-esteem and racism were hypothesized as having relationships with birth weight and gestational age of the newborn in African-American childbearing women. Stress has been associated with maternal and newborn complications (Crandon, 1979a, 1979b; Davids & DeVault, 1962; Lederman, Lederman, Work, & McCann, 1981; McDonald &

Christakos, 1963; Norbeck & Tilden, 1983). Stress was targeted as an evolving concept of risk in low birth weight research (Institute of Medicine, 1985). Although few studies have investigated relationships with stress and low birth weight/preterm delivery in African-Americans, past research supported stress as an important factor in poor birth outcome.

Studies on stress related to health outcomes generally focused on white subjects. Self-esteem, a vital historical, political and social factor has been the focus of studies with African-American researchers and participants (Clark & Clark, 1947; Hraba & Grant, 1970; Smith, 1980; Ward & Braun, 1972). This study proposed self-esteem as an important factor relating to poor birth outcome. This assumption was made despite the lack of direct supporting literature. Validation was based on historical experience meshed with reported studies. Self-esteem was hypothesized to have a relationship with low birth weight and preterm delivery in African-American childbearing women.

Racism and the effects of racism are infrequently presented in studies related to health outcomes. This absence was particularly apparent in the nursing literature (Chopoorian, 1986). Yet when North American history is reviewed, racism and its ramifications are astounding (Bennett, 1982; Davidson, 1980; Franklin, 1974; Jordan, 1968). Current literature (Blendon, Aiken, Freeman, & Corey, 1989; Neighbors, 1986; Taylor, Neighbors, & Broman, 1989; Wenneker & Epstein, 1989) targeted aspects of racism in health care which will be reviewed in Chapter Two.

Variables associated with the significantly higher African-American low birth weight/preterm delivery rates need to be identified, described, and measured. Racism, stress and self-esteem are presented as factors

which mandated further study. The rationale for this investigation is summarized as follows: 1) infant mortality, the death of a live-born infant before the first year of life, is a current crisis and a depletion of future generations; 2) infant mortality statistics are documented health indicators of the community or the nation; 3) twenty other nations ranked higher in infant mortality statistics than the United States; 4) low birth weight and preterm delivery are major determinants of infant mortality; 5) low birth weight and the resultant infant mortality rates for African-American childbearing families are approximately twice the rates for white families; 6) despite investigations with specific risk factors held constant, the dramatic differential is unexplained; 7) the health and lives of present and future generations of African-Americans are in jeopardy. In effect, there is a state of siege.

Contributions to Nursing Science

This study targets four contributions to nursing science. First, an investigation of factors related to low birth weight and preterm delivery provides additional knowledge. Although documentation of the disparity between African-American and white low birth weight and preterm delivery rates is great, causal findings when specific risk factors are controlled, are minimal. This study focuses on factors not considered previously in childbearing African-American families. Although studies occurred in the white population relating stress with poor maternal and fetal outcome, no studies existed investigating the effects of stress, self-esteem and racism on childbearing African-American families and their babies.

Second, this descriptive study of factors related to low birth weight and preterm delivery is a necessary prerequisite to intervention

studies. The urgency for research related to the health of African-American childbearing women and their families is strengthened by this investigation. Such research is critical, not simply to expand knowledge, but as a forerunner for aggressive intervention.

Third, few studies related to racism and health exist in the literature. No instrument was found that assessed perceptions of racism by African-American women. This necessitated the development of a measurement tool discussed in Chapter 3. The Perceptions of Racism Scale (Green, 1990b) an instrument assessing perceptions of racism is a vital component of the study and a meaningful contribution to subsequent research of African-Americans.

Fourth, the dismal statistics relating to the health of African-Americans in a multitude of arenas are grave (Bureau of Maternal and Child Health and Resource Development, 1988; U.S. Department of Commerce, 1980, 1987; U.S. Department of Health, Education & Welfare, 1975). Knowledge and intervention are part of the solution, a part to which the scholarly community can contribute. However, this study projects the necessity for change beyond the level of childbearing families and beyond the level of scholarly pursuit. It demands that economic, political and social change occur at all levels, local, national and international.

CHAPTER TWO

CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

A South African exile, living in Botswana, journeys in and out of madness in a Question of Power (Head, 1974). As her hallucinations increase, so does her inability to distinguish reality from bizarre fantasy. Her mutterings and ravings trouble her small son.

> "What are you saying?" the small boy asked.
>
> "Poetry," she said. She found that the word 'poetry' excused any mental ramblings and he understood. He was supposed to say Jack and Jill went up the hill, out loud. She said it was all poetry, only hers was complicated. (p. 94)

Certain concepts were used prior to and during the development of this study. They formed the underpinnings for the questions and the subsequent hypotheses. These theoretical concepts are presented; a review of the relevant literature will follow. The concepts are not madness, nor are they poetry. Yet the appalling disparity of African-American low birth weight, preterm delivery and the resultant high infant mortality demand revelations and solutions that might be deemed mad. Or, for the visionary, revolutionary.

Conceptual Framework

The theoretical model for this study hypothesized relationships among stress, self-esteem and racism with low birth weight and preterm delivery. These three variables will be presented separately and collectively.

Stress

Lazarus and Folkman conceptualized stress as: 1) a stimulus "events impinging on the person or arising within the person as drive stimuli" (Lazarus & Folkman, 1984, p. 12); 2) a taxing relationship between the person and the environment (Folkman, Lazarus, Gruen, & DeLongis, 1986); and 3) a daily hassle rather than a major life event (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982). Multiple studies have supported relationships with stress and poor maternal and fetal outcome (Blau et al., 1963; McDonald & Christakos, 1963; Norbeck & Tilden, 1983; Nuckolls, Cassel, & Kaplan, 1972). These studies targeted primarily white women. Green (1990a), in a replicated study, described differential patterns of stressors in a sample of poor, African-American childbearing women compared with the chiefly white, middle class sample in the original study (Arizmendi & Affonso, 1987). Although only Reeb, Graham, Zyzanski and Kitson (1987) demonstrated relationships with stress and poor fetal or maternal outcome in African-American childbearing women, the literature relating stress to poor childbearing outcomes, strengthened the proposed relationships. In the current study, stress was hypothesized as having a negative relationship with birth weight and gestational age of the newborn. This theoretical relationship is portrayed in Figure 1 and is supported by studies in the literature review.

Self-Esteem

Self-esteem was the second hypothesized predictor of birth weight and gestational age of the newborn. Through the prism of racism, self-esteem has particular significance for the African-American childbearing

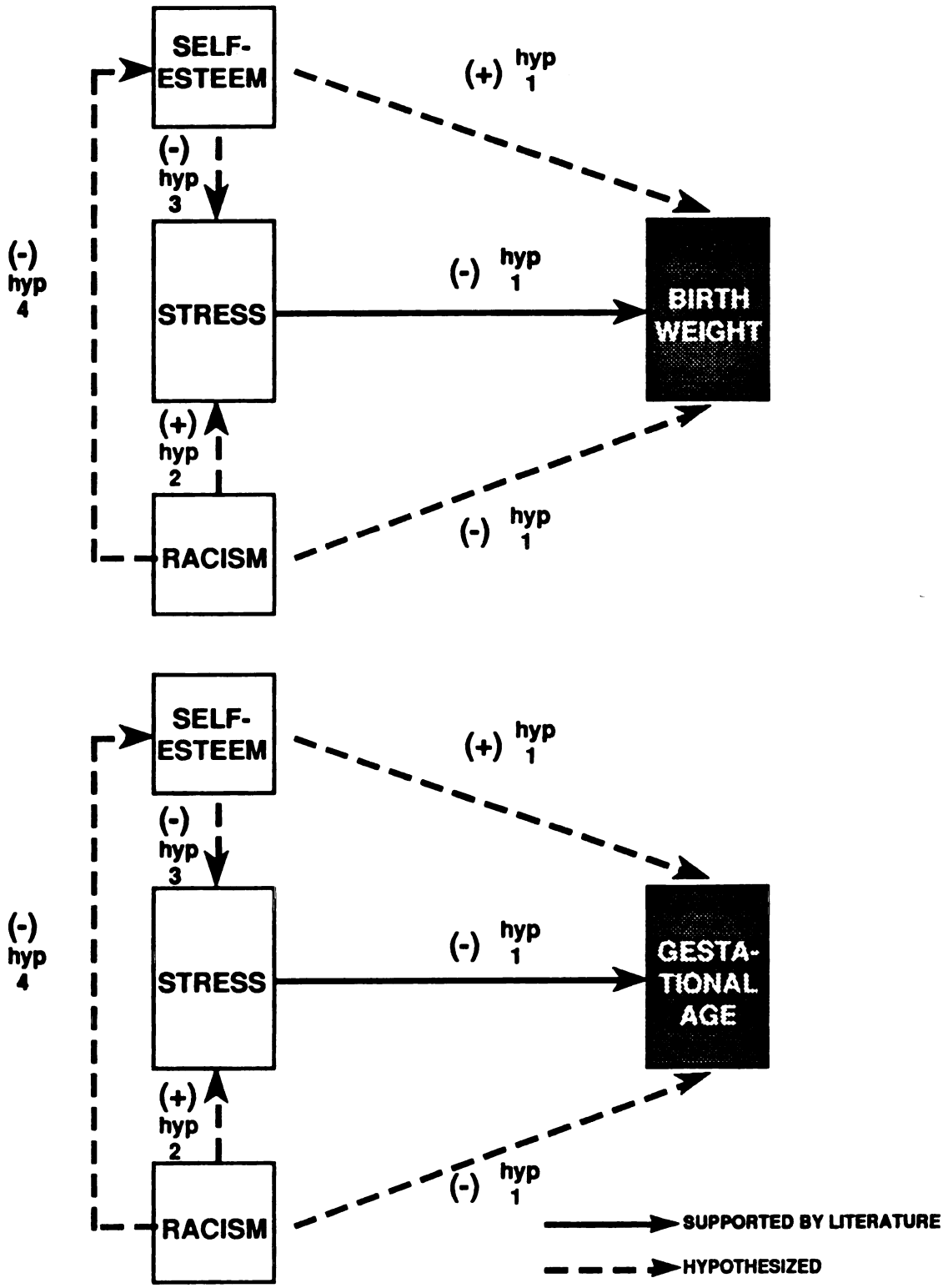


Figure 1. Proposed relationships of study variables.

family. Rosenberg's (1965) definition was used. If the person has high self-esteem, then he/she is viewed as "good enough" (p. 30). "Low self-esteem implies self-rejection, self-dissatisfaction, self-contempt" (p. 31). Self-esteem was defined as the self-evaluation of worth. The individual feels that her or his worth, though not necessarily above the worth of others, is certainly not worse (Rosenberg, 1965).

For the African-American, self-esteem has specific relevance. Mays (1986) reviewed the history of African-American people since slavery and concluded that "more important than economic or education achievements is the struggle for a definitive experience of one's individual self" (p. 592). It is the struggle to define self that is present in the "ambivalences surrounding their identities today" (p. 593). Barnes (1980), wrote the following in response to a question about rearing an African-American child with high self-esteem in this society:

> It is obvious that we who are concerned about the black children must think about them in relation to black families and the black community never forgetting that this entire configuration is embedded in a society that devalues everything black (p. 106).

A concept of self for the African-American must be viewed in the context of society's definition intertwined with the individual's definition. Society's statement, unfortunately, is the definition of the ruling class; it does not embody the definitions of the oppressed. History is viewed from the vantage of the powerful, not the powerless (Fanon, 1963; Rodney, 1974). In this context, self-esteem for the African-American is justifiably hypothesized as a factor related to health outcomes, specifically low birth weight and preterm delivery.

While the stress studies presented in the review of the literature focused primarily on white participants, self-esteem, a vital historical,

political and social factor has been studied by scholars, particularly African-American scholars. Although the studies are not specifically related to birth outcome they do relate to health and support the proposed relationships. Self-esteem is hypothesized as having a positive relationship with birth weight and gestational age of the newborn. This theoretical relationship is illustrated in Figure 1 is supported by studies in the literature review.

Racism

Historically, racism in the United States is an antecedent of attitudes and policies which developed during the enslavement of African peoples in the Americas. Racism is inextricably linked with oppression; mental and physical dehumanization of the slave was necessary to maintain ownership and control (Aptheker, 1969; Fanon, 1963; Franklin, 1974; Kovel, 1970). Racism did not end when slavery officially ended, but persisted and continued. This was not by chance, but the result of conscious and deliberate policy. In opposition to these policies and attitudes, from the period of enslavement until the present time, a bitter, dramatic, and resilient struggle by African-Americans unfolded. It is the perception of racism, and the resulting relationships with low birth weight and preterm delivery by the African-American childbearing woman which were the focus of this study.

Racism embodies the following concepts: 1) assignment to racial groups based on physical characteristics; 2) associated inferiority or superiority of designated racial groups; 3) hereditary origins of racial groups, i.e., interchangeable attributes; and 4) definition of the group usually determined by the group in power. Specifically for this study

racism relates to the experience by African men, women and children prior to and since European enslavement. It consists of the economic, political and social consequences of the slave trade and the continued disenfranchisement and oppression. Racism, nationally and internationally is not confined to African-American and white relationships (Carlson & Colburn, 1972; Feagin, 1978). However, white on black racism is the primary focus of this study. Racism was defined in two ways. Institutional racism is that racism which exists in established institutions or organized structures within the society. These institutions, private or public, encompass arenas of health, social welfare, politics, economics, and other segments of structured human activity (Barbarin, Good, Pharr, & Siskind, 1982; Carmichael & Hamilton, 1967; Essed, 1990). Perceived racism is that racism in which an individual or group perceives differential treatment, experience and attitudes and reacts on the basis of that perception. Racism was hypothesized as having a negative relationship with birth weight and gestational age of the newborn. This theoretical relationship is illustrated in Figure 1 and is supported by studies in the literature review.

Stress, self-esteem, and racism have been conceptualized in specified relationships (Figure 1) with low birth weight and preterm delivery. Stress and racism were hypothesized to have negative relationships with birth weight and gestational age of the newborn. Self-esteem was hypothesized to have a positive relationship with birth weight and gestational age of the newborn. Racism was hypothesized to have a positive relationship with stress and a negative relatioship with self-esteem. Self-esteem was hypothesized to have a negative relationship with stress. In the subsequent literature the proposed theoretical

relationships are supported and are discussed in terms of methodology, threats to validity and significance.

Literature Review

This critique analyzed six groups of studies organized around the study variables. Validation of the hypothesized relationships of low birth weight and preterm delivery with stress, self-esteem and racism was attempted. The studies were reviewed in terms of methodology, threats to validity and significance. The first group addressed the higher African-American infant mortality rates. Here, the critical problem of infant mortality was substantiated and relationships between low birth weight/ preterm delivery and infant mortality were supported. The second group focused on the low birth weight differential between African-Americans and whites. The two-fold disparity was documented. The third group reviewed the differential African-American/white outcomes in preterm labor and delivery. The fourth group addressed relationships of stress with low birth weight and preterm delivery. The fifth group reviewed self-esteem in relation to health outcomes and African-Americans. The sixth group studied relationships with racism and health outcomes. Each group is summarized in an accompanying table in the following discussion.

This literature critique reaffirmed a grave societal problem, summarized what has been studied, presented unanswered questions and provided support for the consideration of stress, self-esteem and racism as factors related to differential low birth weight and preterm delivery rates in the African-American childbearing family.

Studies of Infant Mortality

Methodology and Threats to Validity

In a 1985 study, Binkin, Williams, Hogue, and Chen matched cohort records for California (n=682,729) between 1980 and 1981 and for Georgia (n=233,608) between 1979 and 1981, to target factors related to the higher African-American infant mortality. The higher mortality rate was related to: 1) considerably higher rates of low birth weight babies, and 2) higher mortality rates among normal weight babies.

In this as in other population studies the large sample size minimized statistical conclusion validity. Internal validity was threatened by not including demographic factors, as income and education, which could have affected neonatal mortality. The investigators stated that the implications of the study were: 1) the need for a reduction of low birth weight infants, if there is to be a decrease in African-American infant mortality rates; 2) the need for increased survival of optimal weight infants if there is to be a reduction in mortality rates; and 3) the need for better physician estimates of viability, thereby delaying labor if infant survival was not probable.

Binkin, Rust, and Williams (1988) in a retrospective population study (N=1,038,758), investigated the effects of race, residence and prenatal care as confounding variables in the relationship between maternal age with low birth weight, short gestation and neonatal mortality. California matched birth and death certificates from 1981 to 1983 were analyzed. Four infant racial groups were: 1) African-American non-Latino; 2) United States born white; 3) United States born Latino; and 4) Mexican. California matched birth and death certificates from 1981 to 1983 were selected. Four categories of birth weights included in the

analysis were: 1) 500-1499 grams; 2) 1500-2499 grams; 3) ≥2500 grams; and 4) all weights. The authors found that whites had the lowest overall mortality (4.2 per thousand live births). The African-American rate was the highest (7.7 per thousand live births). The Latino groups, U. S. and Mexican-born were closer to the white figure (4.4/1000 and 4.6/1000). Particularly significant was the finding that the mortality rate for African-Americans was higher than the other groups in the ≥ 2500 gram category, the optimal birth weight division.

The issue was raised of racial bias when reporting the cause of infant death. An examination of autopsy rates demonstrated the highest rates among whites (59.7%), and the lowest among Mexican-born Hispanics (50.6%). If non-white infant deaths were less likely to be autopsied, there were potentially other significant omissions. The accuracy of reporting on death certificates may have been questionable in this as well as other population studies (Berendes, 1987).

Two primary issues were reaffirmed by this study. First, the increased low birth weight rates of African-American babies was documented again. Second, the higher infant mortality related not only to an increased number of low birth weight babies but to an increased number of deaths of those babies that were optimal weight. This is substantiation for the existence of factors in the lives of African-Americans which contribute to higher low birth weight rate and a higher infant mortality among babies of optimal birth weight.

Boone (1982) in a retrospective descriptive study, using birth and death certificate data, medical and nursing records from a public hospital in Washington, D.C., compared two samples of African-American women and their babies. One group delivered low birth weight infants while the

second delivered normal weight babies. A subsequent comparison was made between a normal group (n=105) and a very low birth weight group (n=105). Significant relationships (p >.01) were found between very low birth weight babies and no prenatal care, close proximity to hospital and alcoholism. Significant relationships were also found (p >.05) between very low birthweight babies and drug history, hypertensive history, number of previous spontaneous and therapeutic abortions. The study is generalizable to other high-risk African-American pregnant women, residing in urban areas. The study highlighted the influence of factors other than marital status, maternal age and education commonly discussed in the low birth weight literature as demonstrating relationships with neonatal mortality.

Boone (1985) in a qualitative study, conducted and analyzed in-depth interviews with eight African-American women who experienced an infant death within the first year of life. The sample was taken from a larger sample of 457 low birth weight patients (Boone, 1982), although the eight interviews came from a sub-sample of 105 women with very low birth weight (VLBW) infants. The investigator found that the women did not share the attitudes associated with a "culture of poverty," (p. 1008, i.e., absent fathers, pregnancy resulting from grief, casual relationships). Data suggested that children were highly valued by the community, but that female kin may have failed to provide support necessary for positive pregnancy outcome.

The aim of the study was to explore the psycho-social contexts of pregnancy from the perspective of poor, African-American urban women. Boone proposed that: 1) the traditional epidemiological presentation of a "culture of poverty," is an inadequate explanation for higher African-

American infant mortality rates; 2) the positive values placed on children and pregnancy together with other stresses may lead to a greater probability of pregnancy failure; 3) the feelings of alienation and powerlessness expressed by the respondents may stem from social and occupational positions in the urban structure. Related problems identified were the lack of awareness by the women of specific health concerns as signs of premature labor. The author stated that policy makers needed to realize the cost-effectiveness of health education for life style changes.

Questions of validity (does the study accurately represent reality?) have been answered by traditional field research methodologies (Hammersley & Atkinson, 1983; Schatzman & Strauss, 1973). It would have been desirable if a portion of the low birth weight sample did not come from the very low birth weight group (<1500 grams) but from those babies weighing less than 2500 grams but more than 1500 grams. Possibly the longer intensive care hospitalization of the very low birth weight babies affected the quality of the maternal response differently than it would in mothers of babies closer to viable weight who experienced less hospitalization. Although 24 interviews were scheduled only 8 materialized. Attempts to interview more than 8 would have increased the available data.

Geronimus (1986) analyzed data from 1976 through 1979 from linked birth and infant death certificates in Washington, Louisiana and Tennessee (N=305,907). Infant mortality rates were calculated by age and race. Relationships with maternal age, race and residence (rural or non-rural) were analyzed. An unexpected finding of the study was that African-American primiparous women in their 20s and 30s had rates of short gestation, low birth weight and neonatal mortality higher than that

demonstrated by white teenagers above 14 years and African-American teenagers above 16 years.

The omission of other possible variables relating to maternal age, race and birth outcome as education and income was a threat to internal validity. Association with maternal age and pregnancy outcome has been supported in the literature (Friede, Baldwin, Rhodes, Buehler, & Strauss, 1988; Institute of Medicine, 1985). However, the investigators did consider the literature which controlled for other risk factors as nutrition, medical underservice and inadequate housing. When these environmental risk factors were considered, teenagers did not exhibit higher rates of poor outcome. The assumption that young age is a risk factor in poor maternal and fetal outcome was not supported by this study.

Gould, Davey, and Leroy, (1989) used matched birth and death certificates to examine socioeconomic differences in neonatal mortality rates and low birth weight rates between African-American and white California singletons born between 1982 and 1983. Socioeconomic status was ascertained by using the area zip codes. The assumption that zip codes were a marker of financial status though probably valid could threaten construct validity. There could be instances where there is not a relationship with either affluence or poverty and the area of residence. A bias could occur in borderline residential areas which were not at either end of the economic spectrum. The assumption that African-American and white families have the same access to comparable housing and therefore that certain areas would automatically presuppose a specific standard of living is challengeable. While this might be true for white families, it is an incorrect assumption for African-American families where race issues cross class issues (Sidel, 1987).

In the white cohort a significant difference ($p<.05$) was found between each income strata and infant mortality rates. Infant mortality was three times higher in the poorest strata and low birth weight in the poorest strata was over twice the levels in the richest strata. In the African-American cohort, though improvement for birth-weight specific mortality increased as income increased, the differences between the richest and poorest strata was not significant. The neonatal mortality rate for the highest income for African-Americans was higher than the rate for the second lowest strata in the white group. Low birth weight at a specific income level for African-Americans was approximately twice the rate for whites at the same income strata. The study supported the idea that factors other than those traditionally studied from vital statistics are viable predictors of poor outcome in African-American childbearing families.

Kugler, Cornell, and Henley (1990) studied effects of health care systems on differences in low birth weight and mortality between African-Americans and whites. Birth records of four groups based on race of infant (African-American or white) and place of delivery (civilian vs military) were studied in Pierce County, Washington. Linked birth-infant death certificates were analyzed and other variables were controlled for (maternal age, marital status, prenatal care, census tract as a measure of income). Results demonstrated that the African-American low birth weight rate was twice the white rate, irrespective of health system. Civilian African-Americans had approximately twice the neonatal death rates of civilian whites. The mortality rates for African-American military did not differ significantly from either white group.

Several important findings were suggested by their analyses. First, the military system of care was associated with a lower neonatal mortality for African-American babies. Second, there appeared to be less use of prenatal care among the military community where the outcomes were better. Third, demographic and socioeconomic factors did not affect the risk for low birth weight or neonatal mortality. Fourth, the greatest difference in African-American mortality was with the normal birthweight infants. A major cause of death for normal weight African-American infants in the civilian population was the increased number of deaths due to infection, ie, preventable deaths.

The investigators acknowledged that the measure of income, the median family income in the maternal census tract was an approximate measure, a threat to construct validity. In this as in other studies relying on vital statistics data there were other factors relating to outcome which were not considered, a threat to internal validity. A selection bias occurred in that military families may have been different from other families in ways not controlled for which impinged on birth outcome (Alden, 1990). In spite of this, the study suggested that racial disparity in neonatal mortality could be eradicated in a controlled health care system. Within the context of the military structure, is access to care and resources more equitable for African-Americans than in the civilian population?

The studies in Table 1 targeted the dramatic racial disparity in infant mortality rates. Methodology and threats to validity have been examined. The significance of these studies will be presented.

Table 1

Studies of Infant Mortality

Author & Date	Methodology & Sample Size	Variables	Comments
Binkin, N., Rust, K., & Williams, R. (1988)	Retrospective population study linked birth and death certificates 1,038,758 African-American: 99,040 U.S. Latin: 157,484 U.S. white: 592,948 Mexican born: 189,286	Independent: race, birth weight Dependent: neonatal death (8 etiologies)	African-American mortality rates in California less than half of national rate due to low mortality rates for all causes of death Mortality rates for African-American likely to remain elevated unless mortality in normal birth weight is reduced
Binkin, N., Williams,R., Hogue, C., & Chen,P. (1985)	Retrospective population study linked birth and death certificates African-American male: 39,830 African-American female: 35,905 White male: 315,136 White female: 294,055	Independent: race, sex, birth weight, gestation Dependent: neonatal mortality	African-American neonates $\leq$ 3,000g have lower (1985) birth weight specific mortality rates than whites African-Americans have higher LBW rates off setting lower mortality rates At optimal weight and gestational age, African-American mortality rate two times white rate

Table 1 (continued)

Studies of Infant Mortality

Author & Date	Methodology & Sample Size	Variables	Comments
Boone, M. (1982)	Retrospective descriptive (births and death certificate data) 1,112 African-American women LBW: 457 Normal weight: 445 VLBW: 105 Normal weight: 105	Independent: race, economics, prenatal care, age, birth order, marital status, maternal infections, toxic substances, birth weight Dependent: birth weight, mortality rate	For high risk African-American woman, infant death is one of many problems including poor health, unemployment, meaningful social roles
Boone, M. (1985)	Qualitative 8 African-American women with infant death within one year of delivery	Not applicable	Difficult to assess conditions under which specific social factors are harmful Participants articulated high anxiety regarding life circumstances
Geronimus, A. (1986)	Retrospective population study, linked birth and death certificates 305,907 African-American: 65,708 White: 240,199	Independent: race, age, prenatal care, residence Dependent: birth weight, gestation, neonatal mortality	Higher rates of LBW for African-Americans than whites Racial disparity in neonatal mortality not related to teenage pregnancy

Table 1 (continued)

Studies of Infant Mortality

Author & Date	Methodology & Sample Size	Variables	Comments
Gould, J., Davey, B., & Leroy, S. (1989)	Retrospective population study, linked birth and death certificates	Independent: race, median family income of zip code (6)	Significant difference in outcome for all 6 income strata in white cohort ($p<.05$)
	African-American: 66,577 White: 401,399	Dependent: neonatal mortality rate, LBW, VLBW	Racial gap in neonatal mortality may reflect socio-economic racial disparities in advantaged areas
Kugler, J., Cornell, F., & Henley, C. (1990)	Retrospective population study, linked birth and death certificates	Independent: race, age, martial status, income by census tract, onset and number of prenatal visits	African-American LBW rate twice the white rate
	Civilian: African-American: 2,044 White: 20,159	Dependent: neonatal mortality rate, LBW, VLBW	Civilian African-American neonatal mortality rate twice the white civilian rate
	Military: African-American: 2,095 White: 5,550		Mortality rate for African-American military not significantly different from either white group

Significance

The studies presented in Table 1 documented two findings. First was the powerful positive relationship between low birth weight and infant mortality. This finding provided the rationale for the study of differential African-American low birth weight rates. Low birth weight as a precursor of infant mortality has been targeted as a critical area for research and action in the national health policy arena (Institute of Medicine, 1985; U.S. Department of Health, Education & Human Services, 1986).

The second finding was that even with optimal weight infants there is a higher infant mortality rate in the African-American community (Binkin, Rust, & Williams, 1988; Binkin, William, Hogue, & Chen, 1985; Kugler, Cornell, & Henley, 1990). This supports the concept that there are factors experienced by African-Americans that are either not experienced or experienced differently by other racial groups which relate to higher infant mortality and low birth weight rates. What needs to be determined are: 1) the nature of contributing factors; 2) how they function and; 3) the innovations in the health care system necessary for change.

Studies of Low Birth Weight: A Racial Disparity

Methodology and Threats to Validity

Ahmed (1989) analyzed data from African-American live births in Washington, D.C. from 1980 to 1984 (N=45,695) to determine relationships between resident (urban) and nonresident (suburban) categories with low birth weight. Although a larger proportion of urban mothers were teens,

unmarried, had less education and received insufficient prenatal care, the residential differences were not significant when specified risk factors were controlled. According to the authors urban and suburban poverty are similar in Prince George County. They suggested that in other locales where urban poverty is more distinct, the differences between urban and suburban outcomes may be sharper. The study supported the viability of studying differences among African-Americans groups rather than restricting the focus to race comparative research.

Collins and David (1990) used the 1980 median family income of the mother's census tract to compare outcomes for African-American and white births in Chicago in 1982 and 1983 (N=103,072). African-American neonatal mortality and low birth weight was twice as high as that of whites. Low birth weight risk was twice as high for all categories of income, education and age groups. Though low income was associated with a greater low birth weight risk for African-Americans than whites, there was less divergence between them in the poorer areas. As in the Ahmed study (1989) census tract data as a measure of income limits generalizability. One may derive a median family income but this is a limited measure of the economic status of the family.

David (1986) used United States vital statistics and census reports of births for the years 1950 and 1967 (n=490,522) to re-examine the reported rise in African-American low birth weight (LBW) rates during this period. As there was no distinction made prior to 1969 between black and other non-white groups the authors stated that in this study "the terms Black and non-white are nearly interchangeable" (p. 380). Low birth weight rates were calculated for 21 states plus the District of Columbia, subdivided into three reporting areas (Rising, Intermediate and Stable LBW

states). The change in LBW rates was calculated and a rise in non-White LBW rate was documented. The authors hypothesized that underreporting secondary to greater home births in 1950 accounted for a portion of the observed rise in the non-white low birth weight between 1950 and 1967. Despite the underreporting hypothesis it is evident that the rise in African-American low birth weight was real. Errors in vital statistics collection and recording cannot account solely for increases in non-white low birth weight rates.

In this study the assumption of black and non-white as interchangeable groups threatened construct validity (Cook & Campbell, 1979). The authors considered this bias by selecting states for the study where African-Americans made up at least 90% of the non-white group. However, it cannot be definitively ascertained that non-white equals black without considering the effects of the other non-white groups in the sample. The issues of underreporting and racial classification are key problems in this and other population studies. These problems relate to both data collection and analysis, and will be discussed further with the significance of the studies.

Dowling and Fisher (1987) examined low birth weight in a sample of African-American (n=236) and Mexican-American women (n=236). Of the Latinas, 210 were Mexican born and 26 were born in the United States. This study is important as two racial groups were compared, who despite similar economic and social conditions, had significant differences in low birth rate rates. Mexican-American rates resemble more closely white rates and are less than one-half the African-American rate (see Table 2). Hypothesis guessing and experimenter expectancies, threats to construct validity could have occurred with both the subjects and the interviewers

(one of whom was the investigator). Birth weight and other medical data were obtained from the chart at the time of the interview. A blind interview would have reduced bias related to these two threats.

The authors documented a higher incidence of low birth weight for African-Americans ($p<.01$) than for Mexican-Americans in the sample. However, the difference between the two groups in the incidence of preterm delivery was not significant. The authors were aware that generalizability might be a problem in terms of the group that the Mexican-American sample represented. Was their current poverty reflective of immigrant status or their prior socio-economic condition? It is conceivable that those immigrants who left Mexico had a more solid socio-economic base than those African-American families with whom they were compared, reducing generalizabilty related to projected equal impoverishment of the two groups.

Gould & Leroy (1988) in a retrospective study of singleton births (N=127,558) analyzed birth certificate and census data to compare birth weights between African-Americans and whites. As in previous studies, the authors found relationships with demonstrated risk factors as maternal age, median family income, prenatal care and low birth weight. The racial gap persisted across all income levels ($p<.05$). The authors stated that the mechanism of influence of socio-economic status on birth weight was not known and they proposed that there were other factors exerting influence on birth weight. The study supported: 1) the disparity between African-American and white birth weight rates, even when selected risk factors were accounted for and; 2) the necessity to study the relationship of additional socio-economic factors on birth weight.

Hoff et al. (1985) in a sample of African-American (n=1,461) and white (n=383) primiparous females retrospectively studied the relationship of selected socio-medical characteristics with birth weight for gestational age. The white neonates were significantly heavier (p<.0001), but differences between African-American and white neonates in birth for gestational age were not significant. The sample size for African-American women was over three times greater than that for white women. As no power analysis was calculated, a statistical conclusion validity threat was present (Cook & Campbell, 1979). This study supported the viability of sociomedical factors in birth outcomes. An important methodological component was a 2-4 year follow-up of the study including an assessment of educational attainment. The use of gestational age as well as birth weight as a dependent variable was also important. Birth weight, an easily measurable dependent variable has been the focus of past research, but gestational age, though harder to extract and less reliable in records may be a more viable outcome measure (Verkiive-Vanhorick et al, 1986; Patterson, Prihoda, Gibbs, & Wood, 1986). The African-American females in the study were better educated and were four times more likely to report that they wished to obtain further education than the white group. Although specific factors as prenatal care and cigarette smoking were related to pregnancy outcome, other known factors as education did not influence birth weight.

Joyce (1990) used monthly vital statistics data from 1968 through 1988 to evaluate the observed increase in the incidence of low birth weight in New York City. A downward trend existed prior to 1984. Data was aggregated monthly for African-Americans and whites separately. However, as in other studies (David, 1986; Klebanoff & Yip, 1987), the

category of whites included Latinos, as they were not identified on New York City birth certificates until 1978, resulting in a construct validity threat to the conclusions. The investigators cited an increase in substance abuse as the most likely explanation for the increase in low birth weight between 1981 and 1987. While substance abuse in pregnancy, particularly cocaine is related to low birth weight (Petitti & Coleman, 1990), it is imperative to investigate a multitude of societal factors. The existence of the low birth weight disparity when specific risk factors are controlled, mandates this investigation.

Kessel, Villar, Berendes and Nugent (1984) in a retrospective population study analyzed live births from states reporting both birth weight and gestational age for the years 1970 through 1980. Three categories were examined: term low birth weight, preterm low birth weight and low birth weight, the total of the first two. A downward trend was indicated in low birth weight rates for both African-American and white babies, due to a reduction of term low birth weight infants. However the proportion of preterm low birth weight infants in the low birth weight infant category rose from 1970 to 1980. The African-American/white disparity in low birth weight continued, demonstrated by a decline in the incidence of low birth weight for white infants by 16.7% and for African-American infants by 9.8%.

The authors cited limitations of the findings including incorrect determination of gestational age due to misdated last menstrual periods (LMP), a construct validity threat. Generalizability was threatened by omitting those states (20% of births) which lacked gestational age data. Another treat to validity was the description of only two racial groups, black and white. There was no indication that other racial groups were

omitted from the analysis or if non-white was considered equivocal with African-American. The study raised critical questions for research and public policy. The authors cited past focus on improvement of birth weight rather than preventing premature labor and suggested additional areas of focus. Though confirming racial differences in birth weight, they did not propose any explanations for these differences.

Klebanoff and Yip (1987) used birth certificates to link the births of infants born in Tennessee from 1979 to 1984 with their mothers (N=43,891) in a study examining relationships between maternal and infant weights. A significant positive relationship ($p<.0001$) was found between maternal and infant weights for nonwhites and whites. Again as in the David and Joyce studies, black and nonwhite were used interchangeably because "the overwhelming majority of nonwhite births in Tennessee during this interval were black" (p. 288).

The overall weight distribution for nonwhites was lower than for whites, supporting previous birth weight findings. The only confounders of birth weight reported on Tennessee birth certificates were maternal age, education, marital status and gestation at onset of prenatal care so that additional factors relating to birth weight could not be considered, a construct validity threat. The weight distribution for nonwhites was lower than that for whites for nearly every value of maternal birth weight. However variables hypothesized to relate to the low birth weight differential were not included in the study.

Kleinman and Kessel (1987) using data from five items on birth certificates of live births in the United States for 1973 and 1983 analyzed single births to African-American (n=337,685) and white (n=1,706,384) mothers. As in the previously cited studies, a

retrospective design restricted generalizability across constructs as the investigator could only examine the variables of interest but not manipulate them. If regression to the mean occurred, the real change scores (birth weight differences between groups), may in fact be higher than observed and thus strengthen the study conclusions. A selection threat was the exclusion of data from California, Texas and Washington as the level of mother's education was not reported on birth certificates. It is conceivable that data from these states varies with data from the rest of the country. Similar selection threats were discussed in previous studies. The authors concluded that: 1) African-Americans had higher low birth weight rates for every combination of maternal factors; 2) the African-American/white ratio was larger among low risk women than among high risk women and; 3) racial disparity in birth weights is increasing.

Miller and Jekel (1987) conducted a study to determine if increased low birth rate risk for African-American mothers would occur if twenty-two selected risk factors were controlled. The study included 2,736 infants and mothers. As in the Dowling and Fisher (1987) study, variables assumed to affect low birth weight were categorized. Mono-method and mono-operation bias occurred as chart review, supplemented by selected pediatric investigator review was the sole method of data collection. The fact that the pediatric investigator did not interview all the subjects posed the threat that risk factors might have been omitted in the interview and/or chart review. The authors concluded that the incidence of low birth weight was consistently higher among African-Americans than whites in both low and high risk groups ($p=.002$). In addition they highlighted an important problem in the epidemiology of low birth rate. A large number of physiological, social and economic conditions must be

considered. This study was important as it attempted to account for twenty-two such factors.

Murray and Bernfield (1988) studied data from 31,871 California births in 1978 where maternal age and education levels were comparable, to determine the effect of prenatal care on low birth weigh for African-Americans and whites. The authors attempted to insure similar socioeconomic indicators in both cohorts, strengthening generalizability. They concluded that African-American mothers used prenatal care later and fewer times than white mothers ($p<.0001$). However, this difference in utilization accounted for less than 15% of the disparity between African-American and white low birth weights. For the African-American term infants, increases in any level of prenatal care was associated with a significant decrease in the low birth weight rate. For whites, only adequate prenatal care reflected a comparable relationship.

Reeb, Graham, Zyzanski, and Kitson (1985) examined selected biomedical and social risk factors as predictors of intrapartum complications and low birth weight in a sample of 140 urban black women (see Table 2). In contrast to the studies previously discussed, the investigators measured the psycho-social variables by multiple scales avoiding mono-method and mono-operational bias as construct validity threats. Data was collected prior to knowledge of outcome minimizing the threat of experimenter expectancies.

The investigators concluded that family functioning was significantly associated with intrapartum complications and low birth weight ($p<.0005$) and that stressful events ($p<.01$), maternal worries ($p<.01$) and maternal depression($p<.01$) were significantly associated with low birth weight. Generalizability is acceptable for those African-American women

represented by the sample. The results supported hypotheses relating specific psycho-social variables with low birth weight.

Shino, Klebanoff, Graubard, Berendes, and Rhoads (1986), in a much quoted study examined low birth weight differences across several ethnic groups in Northern California Kaiser Institutions (N=29,415). The low birth weight rates were highest among African-Americans (7.70%), moderate among Asians (5.57%) and others (5.2%) and low among whites (3.55%) and Latinos (4.00%). Issues of causation arose as in previous studies, in terms of which independent variables affected the dependent variable. Extraneous factors and their relationship to the independent variables were a threat to internal validity. Generalizability was increased by the diverse number of women the sample represented. The investigators noted that the population using Kaiser facilities was more homogeneous in socio-economic status than the national population. They suggested that this difference may be manifested by the lower low birth weight rates for African-Americans in the study as compared with national rates.

Showstack, Budetti, and Minkler (1984) analyzed California vital statistics records of all births to mothers who were residents of Contra Costa or Alameda counties in 1978 (N=18,243). They hypothesized that sets of demographic and socioeconomic variables obtained from birth records would be independently associated with birth weight (see Table 2). Among the study conclusions were that prenatal care, considering the number and timing of the visits, had a significant relationship with higher birth weight, particularly for African-American babies ($p<.01$). The large sample size again minimized the threat of low statistical power. Issues of causation arose as in previous studies in terms of the relationship of specific independent variables to the dependent variable (LBW). A

theoretical argument suggests that the independent variables were not, as hypothesized, independently associated with birth weight.

Williams, Binkin, and Clingman (1986) used matched birth and death certificates in California to compare outcomes among four racial and national groups (U.S. and Mexican-born women with Spanish surnames, African-Americans and whites). The authors noted that the percentage of low birth weight babies for whites was similar to those for the two Latino groups in spite of increased risk factors in the Latino groups. Generalizability may not be applicable to all settings, but it is possible that study results are reflective of comparable populations.

The authors point to the favorable birth weight data of both groups of Latinos as a significant issue when analyzing their socioeconomic status which is poorer than that of whites. These issues and the comparisons with African-American outcomes were discussed previously in Dowling and Fisher (1987), and raised significant questions as to the factors present or not present in the African-American population as compared with the Latino population.

Table 2

Studies of Low Birth Weight (LBW): A Racial Disparity

Author & Date	Methodology & Sample Size	Variables	Comments
Ahmed, F., (1989)	Retrospective population study 45,695 African-American births	Independent: age, education, prenatal care, birth order, marital status Dependent: birth weight	Inadequate prenatal care, unmarried, over 19 years vs. teen related to increased LBW
Collins, J., & David, R. (1990)	Retrospective population study 103,072 African-American and white births	Independent: age, education, marital status, income Dependent: LBW, income	African-American neonatal mortality and LBW twice as high whites Low income associated with greater LBW
David, R. (1986)	Retrospective population study LBW - 1950 Non-white: 490,522 Change 1950-67 Non-white: 107,935 White: not given	Independent: state, maternal age, income, hospital or nonhospital birth, number of MDs Dependent: birth weight	Hypothesized underreporting of non-white LBW in 1950 as a factor in African-American LBW rise in 1967
Dowling, P., & Fisher, M. (1987)	Retrospective descriptive African-American: 236 Mexican-American: 236	Independent: behavioral, medical, or combination Dependent: LBW	Higher incidence of LBW African-Americans ($p<0.01$) than Mexican-Americans. With complications present lower Mexican-American rate = NS when compared to African-American rate

Table 2 (continued)

Studies of Low Birth Weight (LBW): A Racial Disparity

Author & Date	Methodology & Sample Size	Variables	Comments
Gould, B., & Leroy, S. (1988)	Retrospective Descriptive 127,558 African-American and white singleton births	Independent: no or minimal prenatal care, maternal age, family income Dependent: birth weight	Despite income and weight adjustment, persistence of African-American/white birth weight gap shown ($p<.05$)
Hoff, C., Wetelecki, W., Reyes, E., Zansky, S., Dutt, J., Stumpe, A., Till, D., & Butler, R. (1985)	Retrospective Descriptive African-American: 1461 White: 383	Independent: race, age, education, number in household, habits, onset of prenatal care, selected complications	White neonates heavier than African-American ($p<.0001$) African-American women better educated ($p<.0001$) White women smoked more ($p<.0001$)
Joyce, T. (1990)	Retrospective population study Monthly aggregation of births in NYC from 1966-88	Independent: race, prenatal care, marital status, income Dependent: LBW	Downward trend in LBW become positive after July 1984 Cite increased substance abuse as explanation Increased LBW little impact on neonatal mortality rates
Kessel, S., Villar, J., Berendes, H., & Nugent, R. (1984)	Retrospective population study U.S. live births, African-American and white Numbers not stated	Independent: race (African-American or white) Dependent: Term LBW, preterm LBW	Incidence of LBW decreased in 1980 but African-American/white disparity continues Proportion of preterm LBW among LBW infants higher in African-Americans than whites

Table 2 (continued)

Studies of Low Birth Weight (LBW): A Racial Disparity

Author & Date	Methodology & Sample Size	Variables	Comments
Klebanoff, M., & Yip, R. (1987)	Retrospective population study (mothers and babies linked birth certificates) Non-white: 12,537 White: 36,217	Independent: race, maternal birth weight, age, marital status, gravidity, education,month of onset, of prenatal care Dependent: birth weight, gestational age	Weight for African-American babies lower than whites for nearly every value of maternal birth weight Small maternal birth weight possible risk for SGA infant
Kleiman, J., & Kessel, S. (1987)	Retrospective population study Birth certificate data LBW - 1983 White: 2,156,645 African-American: 448,038 LBW with maternal characteristics White: 1978: 591,951 1983: 1,114,433 African-American: 1973 121,110 1983: 216,576	Independent: race, age, parity, marital status, education level Dependent: birth weight	African-Americans had higher LBW for every combination of maternal factors African-American/white ratio larger among low-risk women than among high-risk women Racial disparity in birth weights increasing
Miller, H., & Jekel, J. (1987)	Retrospective Descriptive African-American: 872 White: 1,864	Independent: Environmental factors (2) Fetal factors (5) Medical pregnancy complications (14) Adverse maternal practices (7) Dependent: LBW	Incidence of LBW consistently higher among African-Americans than whites in both low and high groups (0=.002)

Table 2 (continued)

Studies of Low Birth Weight (LBW): A Racial Disparity

Author & Date	Methodology & Sample Size	Variables	Comments
Murray, J., & Bernfield, M. (1988)	Retrospective Descriptive African-American: 3,928 White: 27,943 Total: 31,871	Independent: race, education, age Dependent: gestational age, birth weight	Rates for LBW and VLBW greater for African-Americans than whites ($p<0.001$) African-Americans used prenatal care at Kaiser less ($p<0.001$) Differences in care use accounts for less than 15% of variance in birth weight discrepancy
Reeb, K., Graham,A., Zyzanski, S., & Ketson, G. (1987)	Prospective Descriptive 140 African-American	Independent: demographic (9) biomedical (10) psychosocial (9) Dependent: Intrapartum complications, LBW	Family functioning associated with intrapartum complications and LBW ($p<0.005$) LBW associated with stressful events ($p<.01$), maternal worries ($p<.01$), and maternal depression ($p<.01$)
Shino, P., Klebanoff, M., Graubard, B., Berendes, H., & Rhoads, G. (1986)	Prospective Descriptive African-Americans: 2,716 White: 20,215 Hispanic: 3,051 Asian: 2,082 Other: 1,051 Total: 29,415	Independent: demographic (5) smoking, alcohol trimester of onset of care, pregnancy complications Dependent: birth weight	With selected maternal factors considered, all groups had higher risk for LBW compared with whites Hispanic and Asian LBW not significantly different from whites

Table 2 (continued)

Studies of Low Birth Weight (LBW): A Racial Disparity

Author & Date	Methodology & Sample Size	Variables	Comments
Showstack, J., Budetti, P., & Minkler, O. (1984)	Retrospective population study, birth certificate Total: 18,470 or less Racial Groups: African-American Mexican-American White Other (or varied by analysis)	Independent: race, sex, maternal age, education, prenatal care, hospital of birth, length of gestation Dependent: birth weight	Prenatal care considering number and timing associated with increased birth weight particularly for African-American infants and short gestation infants
Williams, R., Binkin, N., & Clingman, E. (1986)	Retrospective population study 414,538 live births and fetal deaths African-American: 33,091 U.S. white: 197,146 U.S. Spanish surname: 50,938 Mexican Spanish surname: 66,789	Independent: age, parity, birth interval, onset prenatal care, marital status Dependent: very low birth weight (VLBW), low birth weight (LBW), mortality rates (fetal, neonatal, postnatal, infant)	LBW percentage highest for African-Americans, LBW smallest for Mexican born African-Americans had highest birth weight, specific mortality rates for babies $\leq$2500g

Significance

Several issues emerge in the review of the studies related to low birth weight and race. There has been definitive documentation of a higher incidence of low birth weight in the African-American family which persists even when accounting for such factors as maternal age, education, income and prenatal care. Though studies document the disparity between African-American and white low birth weight rates, (see Table 2) no causal relationships have been identified in the low birth weight literature. The reasons for these absences relate to questions of: 1) methodology; and 2) theoretical framework or philosophy.

Population studies represent the largest body of low birth weight literature. The methodology relies on vital statistics, census reports and birth certificate information as the primary data sources. The advantages of this method is that large samples are available for analysis (David, 1986; Gould & Leroy, 1988; Klebanoff & Yip, 1987; Kleinman & Kessel, 1987; Murray & Bernfield, 1988; Shino et al., 1986). The disadvantages include: 1) the limited variables available for study; 2) the retrospective nature of the design; 3) the assumptions taken with specific demographic information as black and non-white as equivalent (David, 1986; Klebanoff & Yip, 1987); 4) the difficulty with extracting specific variable information as gestational age (Kessel, Villar, Berendes, & Nugent, 1984; Patterson, Prihoda, Gibbs, & Wood; Verloove-Wanhorick et al., 1986); and 5) the problems of underreporting associated with census data (David, 1986).

Psycho-social variables as stress, social support and family functioning are not available in vital statistics data. Sometimes the number of years of education or the type of employment is available, but

the human variances related to such factors as availability of employment and housing, access to care, attitudes of health providers, attitudes of clients toward the health care system, are not available for analysis in population studies.

The theoretical framework or philosophical orientation was the second reason presented for the absence of studies related to causal relationships. Issues around racial disparities are controversial and intertwined with governmental economics and politics. Though investigators have identified the disparities and suggested the need to study other factors (Baldwin, 1986; Kleinman & Kessel, 1987) an aggressive approach has not been observed in the low birth weight research.

Studies of Preterm Delivery

Methodology and Threats to Validity

Klebanoff and Yip (1987) examined birth certificates to link the births of infants born in Tennessee from 1979 to 1984 with their mothers (N=43,891) in a study relating maternal and infant birth weights. As in previous studies the weight distribution for African-Americans was lower than whites. For essentially every maternal weight value, African-American infants weighed about 200 grams less than white infants. The authors described a significant trend for increased risk of preterm delivery with decreasing maternal weights for African-Americans and whites (p<0.001). The percentage of African-American preterm babies was higher than that of white babies in all weight categories, although the rate of preterm birth varied much less by maternal weight for both races.

Black and nonwhite was used interchangeably because "the overwhelming majority of nonwhite births in Tennessee during this interval

were black" (p. 288). The only confounders of birth weight reported on Tennessee birth certificates were maternal age, education, marital status and gestation at onset of prenatal care so that additional factors relating to birth weight could not be considered, a construct validity threat. Variables hypothesized to relate to outcome differentials (physical stature, personal habits, socioeconomic status) were not included in the study.

Main, Richardson, Gabbe, Strong, and Weller (1987) evaluated a preterm risk scoring system (Creasy, Gummer, & Liggins, 1980) in an African-American inner city population ($\underline{N}$=391). Factors including medical history, education and work, housing, pregnancy attitudes, personal relationships, sexual history and current pregnancy history were obtained in the scoring system. The women were categorized into "high risk" and "low risk" groups. The risk scoring system did not predict preterm delivery in the study sample and there was no significant difference in outcome between high risk and low risk women despite clear differences in risk scores.

Suthutvoravut, Hogue, Guyer, Anderka and Oberle (1989) analyzed birth certificate data in Massachusetts from 1978 to 1982 for African-American ($\underline{n}$=22,325) and white ($\underline{n}$=313,298) mothers. Six and one-half percent of the African-American births were classified as unknown gestational age while only 1.7% of the white births were classified as unknown gestational age. Again, a disparity in reporting of data was demonstrated. As in other retrospective population studies a multitude of variables potentially affecting outcome could not be considered. Generalizability was strengthened as the sample included a large time and population span, although African-American births in the study were 6% of

the total while white births were 88%. Equivalent numbers in both groups, or larger sample size would have increased statistical conclusion validity. The authors stated that the increased misclassification of gestational age in African-Americans on birth certificates may affect fetal growth rate comparisons.

Yagman et al. (1989) in a study of preterm low birth weight infants attempted to define intrauterine growth retardation by comparing selected reference standards (birth length, birth weight, head circumference). The sample reflected eight geographic sites and three ethnic groups (African-American, white, other). All infants inborn at the eight participating sites were screened for inclusion (4,551). Due to exclusion criteria (n=1,333) and refusal to sign the consent (n=305), the final sample was 21% of the total number (N=985), a statistical conclusion validity threat.

The investigators noted that the choice of gestational age as a reference standard for the three birth measurements had two problems. The first was the lack of accuracy in gestational age assessment. The second is that gestational age as the only reference standard does not enable one to examine separately differences in growth rate and body proportions in different ethnic groups. In this study African-American babies had a small but significant growth difference from white babies for length and weight. African-American babies assessed as small for gestational demonstrated significantly smaller birth weights and head circumferences.

Table 3

Studies of Preterm Delivery

Author & Date	Methodology & Sample Size	Variables	Comments
Klebanoff, M., & Yip, R. (1987)	Retrospective population study 43,891 linked maternal infant birth certificates	Independent: race, maternal birth weight Dependent: LBW, preterm	Increased risk of preterm delivery with decreased maternal weight
Main, D., Richardson, D., Gabbe, S., Strong, S., & Weller, S. (1987)	Intervention study African-American prenatal women N = 391 High risk = 82 Low risk = 309	Independent: risk score, age, gravity, parity, abortions, gestational age at first visit Dependent: gestational age at delivery	Risk scoring system was not a predictor of preterm delivery
Suthutvoraut, S., Hogue, C., Guyer, B., Anderka, M., & Oberle, M. (1989)	Retrospective population study of births	Independent: race Dependent: birth weight, weeks gestation	Misclassification of gestational age on birth certificate greater in African-Americans than whites
Yagman, M., Kraemer, H., Kindlon, D., Tyson, J., Casey, P., & Gross, R. (1989)	Descriptive 985 low birth weight preterm infants	Independent: race, site Dependent: birth length, birth weight, head circumference, gestational age	Problems with gestational age as only reference Observed differences in growth among infants may be differential timing in growth of length

Significance

Findings documented in the low birth weight studies (Table 2) have been reinforced in the preterm delivery studies (Table 3). These included the consistent outcome disparity between African-American and white babies and the methodological limitations of population studies. In addition arguments of misclassification were presented as a possible reason for racial differences in preterm birth and low birth weight (Suthutvoravut et al., 1989; Yagman et al., 1989). Though misclassification has conceivably occurred it should not be accepted as the sole explanation for differential low birth weight rates. When examining questions related to misclassification it is critical that the investigator consider the following: 1) What are the underlying reasons for potential misclassification?; 2) Are African-American babies misclassified at a higher rate than white babies?; 3) Is it more acceptable in North American society to attribute differential outcome to errors of documentation rather than to differences in life experiences, economics or social conditions? Data recording or collection error as the rationale for the disparity in low birth weight, preterm delivery or infant mortality negates society's responsibility for its occurrence and for its change.

The studies reviewed in Tables 1, 2 and 3 summarized the research on the outcome variables low birth weight and preterm delivery and their ominous consequence, infant mortality. The studies following in Tables 4, 5, and 6 present proposed independent variables. They are factors hypothesized to relate to the low birth weight and preterm birth disparity in African-Americans.

Studies Relating Stress with Low Birth Weight and Preterm Delivery

Methodology and Threats to Validity

Blau, Slaff, Eason, Welkowitz, Springarm and Cohen (1963) examined the relationship of psychological factors to preterm births. Two matched groups of mothers, one group (n=30) who delivered prematurely with no associated medical factors and one group (n=30) who delivered term infants were compared. Both groups were assessed clinically and by psychological tests. The authors reported definitive differences within the two groups regarding negative attitudes toward pregnancy, emotional immaturity and family problems. The study's hypothesis was substantiated although a strong Freudian orientation was presented. The investigators determined that there were psychological differences between mothers who delivered prematurely and those who delivered at term. The retrospective, non-blind assessment could have biased the data through the predetermined expectations of the investigator. The study, though dated by conservative class and gender attitudes posed the important concept of a mother's psychological state relating to premature delivery.

In a more current study in Czechoslovakia, Cepicky and Mandys (1989) compared gestation and birth weight among women widowed in pregnancy with married and unmarried women who had not experienced this kind of stressful loss. Though no significant difference was found in the length of pregnancy or the weight of the baby between the widowed and married women, the weight of the newborn was significantly lower in the group of unmarried women ($p<0.05$). As the sample size was small and a power analysis was not calculated, statistical conclusion validity was threatened. However the design examined an innovative stressful event

(death of a spouse) with seemingly comparable controls (married and unmarried women not experiencing such a death).

Homer, James, and Siegel (1990) studied a group of employed pregnant women (N=786) selected from a national survey sample to evaluate the effect of work related stress on pregnancy outcome. The authors found that young women in jobs with high stress and low job control were two times as likely to deliver a preterm low birthweight infant as women working in low exertion jobs. However when associated risk factors (education, smoking, physical exertion of job) were considered the pregnancy outcome differences were no longer significant. For a subgroup of women with a low attachment to work (defined as not wanting to work outside the home after age 35) work related stress increased their risk of preterm, low birth weight delivery. The study sample was generalizable to younger mothers and included more poor, unmarried and third world women than the entire population; the sample size was adequate for a power of 90. As all outcome measures were obtained from maternal recall a construct validity threat was present, though an assumption was made that maternal responses related to pregnancy outcome tend to be credible.

Stein, Campbell, Day, McPherson, & Cooper (1987) interviewed pregnant women (N=483) in Oxford, England to examine relationships of selected social and psychiatric factors with low birth weight and preterm delivery. Low income was the only factor that significantly predicted low birth weight ($p<0.02$). Social class, psychiatric state, adverse life events or social difficulties were not related to birth outcome. Race was not stated in the analysis. The dichotomous analysis of low birth weight and preterm delivery was limited due to the small numbers of low birth

weight (n=14) and preterm (n=5) babies. However, the important research question was explored.

Williamson, LeFevre, & Hector (1989) examined relationships between stressful life events and social supports with serious complications of pregnancy in a group of pregnant women in rural Missouri (N=513). An increase in stressful life events during the pregnancy was related to a 2.3 higher incidence of negative outcomes, whereas a one-time finding of high stress was not a predictor. Women with low social support women had a higher but non-significant rate of complications. As the patients in the study were all white, relatively low risk and all cared for by family physicians, generalizability is limited to similar populations.

Table 4

Studies Relating Stress with Low Birth Weight and Preterm Delivery

Author & Date	Methodology & Sample Size	Variables	Comments
Blau, A., Slaff, B., Eason, K., Welkowitz, J., Springarn, J. & Cohen, J. (1963)	Retrospective Descriptive 30 = delivered term 20 = delivered term	Independent: age, race, socioeconomic, education, parity, gestation at delivery Dependent: trait descriptions	Difference noted between normal and premature mothers re: attitudes toward pregnancy and self
Cepicky, P., & Mandys, F. (1989)	Retrospective Descriptive 40 = widowed in pregnancy 33 = unmarried pregnant 38 = married pregnant All Czechoslovakian	Independent: marital status, month in pregnancy of deceased husband, parity Dependent: length of pregnancy, birth weight, sex	Differences in length of pregnancy = NS Birth weight lower in unmarried group No difference between widowed and married

Table 4 (continued)

Studies Relating Stress with Low Birth Weight and Preterm Delivery

Author & Date	Methodology & Sample Size	Variables	Comments
Homer, C., James, S. & Siegel, E. (1990)	Descriptive 786 employed pregnant women	Independent: race, age, poverty status, education, marital status, smoking, alcohol use, other fertility and obstetric data Dependent: preterm/LBW, LBW, birth weight	High demand jobs associated with preterm, LBW
Stein, A., Campbell, E., Day, A., McPherson, K., & Cooper, P. (1987)	Descriptive 483 pregnant women	Independent: adverse life events, chronic difficulties, smoking working class, low income, unemployment, psychiatric disorder Dependent: LBW	Low income the most important predictor of LBW Small number of LBW babies limited analysis
Williamson, H., LeFevre, M., & Hector, M. (1989)	Descriptive 513 pregnant white women	Independent: race, marital status, age, smoking, parity, 3 stress measures Dependent: 1 of the following: neonatal death, ICU transfer, LBW, Apgar < 7 at 5 minutes	Increase in stressful events associated with 2.3 x higher incidence of adverse outcome

Significance

These studies attempted to establish the relationship of stress in pregnancy and low birth weight and preterm delivery. The assumption has been made that aspects of the woman's childbearing experience, regardless of race or national origin may be generalized to the African-American childbearing woman. This assumption is necessary as literature examining relationships with stress and poor outcome in African-American childbearing women is minimal.

The preceding studies support four conclusions. First, questions related to stress, low birth weight and preterm delivery have local, national and international focus. In short, a worldwide problem has been presented. Second, the retrospective methodology of population studies as reviewed in Tables 1, 2 and 3 has been expanded to prospective, descriptive studies. Third, though multiple measures of stress have been presented additional measures are necessary. Fourth, the rationale for stress as a hypothesized factor in low birth weight and preterm delivery in African-American women is established.

Studies of Self-Esteem, Health Outcomes and African-Americans

Methodology and Threats to Validity

Antonucci, Peggs, and Marquez (1989) examined the relationship between self-esteem and health in white adult patients in a family practice setting (N=68). Self-esteem was measured by a three item sub-scale of the Rosenberg Self-Esteem Scale (1965). Physical health was measured by an analysis of patients' records and the number of symptoms recorded in the Hopkins Symptom Checklist. Self-esteem was found to be positively related to health status (p<.01). The revision of the self-

esteem measure posed a construct validity threat and could be considered a minimal measure of self-esteem. The theoretical application of this study to issues of low birth weight will be discussed with the significance of the studies.

Boyce et al. (1986) followed pregnant Navajo women in New Mexico from 1980 to 1983 (N=968) to examine social and cultural influences on maternal and fetal complications. Interviews were conducted during the pregnancy and a review of obstetrical data was completed two months post delivery. No significant associations were found for neonatal complications, but higher rates of maternal complications were found for the most traditional and least supported women when conventional risk factors were controlled. The authors stated that a selection bias, though possible was not probable. Although the study is not generalizable to other groups in terms of outcome it presents a meaningful theoretical position. Traditionality or cultural background if related to health status or nutrition has a potential affect on childbearing outcomes.

Coe (1982) in a qualitative study of three generations of African-American women (16 maternal lineage triads = 48), developed theoretical perspectives on the identity of black women. One theme that emerged in this study was the "development of a self-view" (p. 96). Coe summarized the properties of this theme as self as a caring person, and positive self-opinions connected to family and community (p. 192). Self was viewed by the respondents as an independent person, and positive self-view was a source of pride (p. 193). Coe's concept of self-view may be equivalent to the conception of self-esteem. Though this study does not address health outcomes or their relationships to self-esteem/self-view, it does develop

a theoretical base for this concept as significant in the lives of African-American women.

Clark and Clark (1947) in a classic study found that African-American children preferred white dolls and rejected black dolls. This study has been cited as an example of African-American self-identity rejection and low self-concept. The study was replicated by Hraba and Grant (1970) in Lincoln, Nebraska. They used the eight questions of the original Clark and Clark study which were intended to measure racial preference (Give me the doll that looks bad), racial awareness (Give me a doll that looks like a white child) and racial self-identification (Give me a doll that looks like you, p. 399). In Chi-square analysis a statistically significant difference was found (N=160, p<.02 - p<.001) between the responses related to racial preference in the two studies. The authors concluded that African-American children in interracial settings are not necessarily white oriented. Construct validity of the design was strengthened by the replication. While the investigators did not present a definitive explanation for the results of the study, they challenged a prior conception of low self-esteem in a sample of African-American children. They suggested that in the study area, increased pride campaigns may have affected a positive change in self-concept. Generalizability to an adult population could be questioned.

Housley, Martin and McCoy (1987) used the Rosenberg Self-Esteem Scale (1965) to assess self-esteem in a group of 14 and 16 year old adolescents in Arkansas. The urban African-American participants had significantly higher self-esteem scores than the urban whites. In the urban participants, the higher economic group had higher self-esteem scores than the poorer group (p<.05), but there was no indication of a

racial and class differentiation in these results. Generalizability is an issue in the consideration of applicability with an adult population.

Pete (1990) studied younger (14 years) versus older (17 years) African-American pregnant adolescents (N=141) to determine if differences in self-concept existed. The self-image of pregnant adolescents was positive ($p<0.05$) with the younger group reporting a better self-concept than the older group or the reference group. This finding challenged the study's hypothesis that older pregnant adolescents would have a higher self-concept than younger pregnant adolescents. The validity of this finding for other settings and other ages relates to the current study. Does the low risk, adult sample of the current study demonstrate high or low self-esteem and what is its effect on birth outcome?

Smith (1980) examined the conscious and unconscious aspects of self-image in African-Americans and whites, in a sample of California college students (N=76). Two relevant hypotheses were: 1) negative black stereotypes and positive white stereotypes are expressed by both African-Americans and whites and 2) African-Americans have lower self-esteem scores than whites. The authors concluded that the first hypotheses was supported, but that there was no significant difference between African-American and white self-esteem scores. Several instruments were used strengthening construct validity. Generalizability was limited by the sample size but might be possible with comparable populations.

Significance

Two issues in the preceding studies are relevant to the current research. First there is support for the idea that self-esteem has a relationship with health or health outcomes. In Antonucci et al. (1989)

Table 5

Studies of Self Esteem, Health Outcomes and African Americans

Author & Date	Methodology & Sample Size	Variables	Comments
Antonucci, T., Peggs, J., Marquez, J. (1989)	Descriptive 68 white, middle class patients	Independent: age, gender, employment, marital status, self esteem Dependent: health status, number of symptoms	High self esteem associated with better overall physical health
Boyce, W., Schaefer, C., Harrison, R., Haffner, W., Lewis, N., & Wright, A. (1986)	Prospective Descriptive 968 pregnant Navajo women	Independent: age, education, income, medical condition, social support, life events, stressful occurrences Dependent: maternal complications (11) neonatal complications (9)	Traditional women sustained complications at twice the rate of least traditional women
Coe, S. (1982)	Qualitative Sixteen maternal triads = 48	Relevant identity themes	Theme of self view theoretical base for concept of self esteem in lives of African-American women
Housley, K., Martin, S., & McCoy, H. (1987)	Descriptive 14 and 16 year old females African-American = 46 White = 44	Independent: race, urban or rural, income Dependent: Rosenberg self esteem scale	Self esteem based on race or area = NS Urban African-American higher self esteem than urban white Higher income associated with higher self esteem

Table 5 (continued)

Studies of Self Esteem, Health Outcomes and African Americans

Author & Date	Methodology & Sample Size	Variables	Comments
Hraba, J., & Grant, G. (1970)	Descriptive Replication of Clark & Clark study (1947) School children = 160 African-American = 89 White = 71	Independent: age, grade, skin color, race of interviewer, race of respondents' friends Dependent: doll preference	Results indicate African-American children in interracial settings are not necessarily white oriented
Pete, J. (1990)	Descriptive 141 pregnant African-American	Independent: age, race Dependent: self concept	Younger and older African-American adolescents not distinctly different in regards to self concept
Smith L. (1980)	Descriptive African-American = 46 White = 30	Independent: race, education Dependent: conscious attitudes, unconscious attitudes	Self esteem scores racial differences = NS Evidence of persistence of negative stereotyped images

a white sample supported an association of high self-esteem with improved health. Boyce et al. (1986) examined another national group, the Navajos, whose history reflects similar oppression and disenfranchisement as African-Americans. Their finding that traditionality (i.e., maintaining cultural norms) was associated with increased pregnancy complications does not negate relationships with self-esteem and pregnancy outcome in

African-American childbearing women. Instead, it supports the concept of cultural relationships and self-concept with health.

The second relevant issue in the Table 5 studies are perceptions related to positive and negative self-esteem in African-Americans (Hraba & Grant, 1970; Housley, Martin, & McCoy 1987; Smith, 1980). The classic doll study (Clark, 1947) reported white preference as measured by doll selection in elementary school aged children. Subsequent studies contradicted these findings (Hraba & Grant, 1970). Smith (1980) determined that African-Americans did not have lower self-esteem scores. Housley, Martin, and McCoy (1987) demonstrated that urban African American adolescent females had higher self-esteem than urban whites. Lack of consensus in these studies does not negate the viability of self-esteem as a factor in the current research. Their significance is not primarily in the results of these studies, but in the questions related to self-esteem that can be raised. What is the relationship of positive or negative self-esteem with health outcomes? Does high or low self-esteem have a relationship with stress? What is the nature of the relationships? What are the ways in which self-esteem can be effectively measured? These questions support the consideration of self-esteem as a factor related to low birth weight and preterm delivery in African-American childbearing women.

Racism, Health and African-Americans

Studies related to racism, health and African-Americans are critiqued in the final section. These studies validate racism, the concluding variable hypothesized to have a relationship with low birth

weight and preterm delivery. The methodology, threats to validity and significance are presented. The studies are summarized in Table 6.

Methodology and Threats to Validity

Allen, Nunley, and Scott-Warner (1989) studied African-American student recruitment and retention in baccalaureate nursing programs. A convenience sample of students, faculty and administrators was selected from public and private institutions in several geographic regions. Qualitative and quantitative data presented barriers to admission, barriers to retention and possible remedies. An example of issues examined and responses was that 85% of the African-American faculty in 1980 and 88% in 1984 saw a "hostile university" as a barrier to admission. This compared with 65% of the white faculty and administrators in 1980 and 48% in 1984. The sample was selected from a wide geographical area, strengthening generalizability. The questionnaire was modified from a national study of admission and retention problems, minimizing a construct validity threat. The authors identified a more conservative climate existing today than the climate of the late 1970s as the background with which to compare current student retention. Issues related to racism and the effect of racism as a factor in nursing school recruitment and retention were presented in this study.

Deficits in access to health care among African-Americans in comparison with whites was demonstrated in a 1986 national survey of the use of health services (Blendon, Aiken, Freeman, & Corey, 1989). The data was collected from a national telephone survey (N=10,130). The study concluded that there were differences in access to care between African-Americans and whites. Fewer African-Americans were satisfied with care received during their last hospitalization ($p<.01$). African-American

patients were more likely than white patients to wait for more than one half hour before seeing a physician on their last out-patient visit ($p<.01$). The authors summarized these disturbing trends in access to care and unmet health needs of African-American patients. Although economics contributed to lack of health services, even African-Americans above the poverty level experienced the disparity in access to health care in comparison with their white counterparts.

The issue of subject recruitment and study conclusions related to African-Americans was raised by Cannon, Higginbotham and Leung (1988). The authors analyzed the race and class background of 200 women who participated in a qualitative study of black and white managerial and professional women. This study demonstrated the necessity for inclusion of specific measures targeted to insure adequate numbers of African-American respondents. African-American women in the study volunteered at a rate slightly higher than the population they represented. The authors cited specific recruitment strategies used to insure a sample which was not disproportionately white. Specific research strategies were incorporated in the design to insure adequate sampling. Despite these design precautions the investigators found that African-American middle class women had less free time than white middle class women to devote to research activities and that many African-American middle class respondents were more visible in the community, than their white counterparts, due to the fact that fewer African-American women were in these positions. Therefore anonymity was more problematic for black middle class respondents than for whites.

Krieger (1990) looked at the effect of racial and gender discrimination in health in a random survey of African-American ($n=51$) and

white women (n=50) residing Alameda County. African-American respondents stated they were 5.9 times more likely than white respondents to keep quiet and accept unfair treatment. African-American women who said they accepted unfair treatment were 4.4 times more likely to report having high blood pressure than those who talked to others or acted as a response to unfairness. Random-digit dialing for sample selection strengthened generalizability in this study which concluded that passive behavioral response to racism was a health risk behavior. However, the sample size was small and documentation of high blood pressure was by self-report, threats to construct and statistical conclusion validity, respectively.

McCord and Freeman (1990) reviewed census and death certificates in Harlem in 1979, 1980 and 1981 and concluded that for African-American men in Harlem the rate of survival beyond age 40 was lower than that of Bangladesh. The authors stated that these results are generalizable to any other inner city area in the United States with a largely African-American population and corresponds to that of impoverished, crisis area third world countries. The crisis state of African-American health status was reaffirmed.

Neighbors (1986) in a sample of African-Americans (N=1,322) stated that epidemiologic studies of race and mental health are conducted from data sets that contain small numbers of African-American subjects. Therefore data collected on groups at risk within the African-American population is limited. This study explored the relationships of three socioeconomic indicators, personal income, family income and income/needs (poverty, near poverty or nonpoor) to psychological distress given exposure to several potentially problematic situations. The investigators argued that traditional indicators of socio-economic status did not give

a true representation of socioeconomic status and used an income measure which included household costs and total family income. This was projected as a more adequate assessment of the African-American family income as it considered the family member with a low income who had access to the incomes of other family members, as well as a high total family income that had to support a large number of people. Random sample selection minimized statistical conclusion validity.

Wenneker and Epstein (1989) investigated racial differences in the utilization of specific cardiac procedures of patients admitted in 1985 for chest pain or circulatory diseases in Massachusetts hospitals. The sample consisted of African-American (n=2673) and white (n=106,902) patients who were between 30 to 89 years of age. A significant racial utilization difference for angiography ($p<.01$) and for bypass surgery ($p<.001$) was found. Though the percent of whites to undergo angioplasty was higher than the percent of African-Americans, this difference was not significant. The authors concluded that despite adjustment for age and sex, whites underwent more of these three cardiac procedures than African-Americans. The large sample size strengthened statistical conclusion validity and the generalizabilty of the results.

Significance

The studies reviewed in Table 6 validate the existence of racism in the health care system. This research demonstrated effects of racism in diagnosis, treatment, management and research focus of health conditions. Racism resulted in: 1) the absence of intervention, treatment or care (Rosoff, 1981); 2) differential rates of potentially positive treatment and care (Wenneker & Epstein, 1989); 3) inadequate treatment or care

Table 6

Racism, Health and African-Americans

Author & Date	Methodology & Sample Size	Variables	Comments
Allen, M., Nunley, J., & Scott-Warner, M. (1989)	Descriptive African-American nursing students = 41 African-American faculty and administration = 16 White faculty and administration = 79	Independent: private, public, race, student, faculty, administrator	Development of barriers to admission retention and possible remedies presented
Blendon, R., Aiken, L., Freeman, H. & Corey, G. (1989)	Survey-national telephone 10,130	Independent: race, age, gender, health status, economic status Dependent: number of ambulatory visits, hospitalizations	Disparity in access to care remains
Cannon,L., Higginbotham, E., & Leung, M. (1988)	Qualitative African-American women = 100 White women = 100	Age, working and middle class occupation	Projects necessity for integration of race and class into qualitative research
Krieger, N. (1990)	Descriptive survey African-American = 51 White = 50	Independent: race, gender, class, education Dependent: response to unfair treatment, high blood pressure	Race, gender, and inability to challenge unfair treatment may be factors for hypertension

Table 6 (continued)

Racism, Health and African-Americans

Author & Date	Methodology & Sample Size	Variables	Comments
McCord, C., & Freeman, H. P. (1990)	Retrospective population study Census and death certificates Central Harlem	Independent: age, gender Dependent: adjusted mortality rate	Of African-American men in Harlem above 40 less likely to reach age 65 than men in Bangladesh
Neighbors, H. (1986)	Descriptive National survey of African-Americans	Independent: gender, age, marital status, income, employment, residence, region Dependent: distress measure	Poor African-American undergoing economic crisis may experience particular distress
Taylor, R., Neighbors, H., & Broman, C. (1989)	National survey of African-Americans 2,107	Independent: age, gender, income, education, employment, measure of distress Dependent: social service action, contact and responses	Positive appraisal of assistance
Wenneker, M., & Epstein, A. (1989)	Retrospective examination of hospital records African-American = 2,573 White = 106,902	Independent: age, gender, income, diagnosis, payer, admission type Dependent: procedure, admission to hospital	Procedure rates differed by race Whites more likely to undergo procedures

(Blendon, Aiken, Freeman, & Corey, 1989); 4) questionable racial conclusions based on research methodology or design (Cannon, Higginbotham, & Leung, 1988); and 5) client responses which were health risks (Krieger, 1990).

Racism or the effects of racism are infrequently presented in the studies related to health outcomes. This absence is particularly apparent in the nursing literature (Chopoorian, 1986). There are several possibilities for this absence. First is that racism is not considered a viable factor in differential health care services and outcomes. This is hardly probable when we review North American history. Second is that other factors confound relationships with race such as economic status. However, it has been documented in terms of the African-American childbearing woman that even when other risk factors as age, education, economics are considered, the incidence of low birth weight babies is significantly higher for African-American women than for white women (Baldwin, 1986; Institute of Medicine, 1985; Kleinman & Kessel, 1987). Third, is that statistics are subject to error. Kitagawa and Hauser (1973) in a study of differential mortality in the United States stated that death rates for nonwhites are clearly subject to substantial error due to undercounts. It is possible that reality may be more grim than imagined.

Conclusion

This review of the literature unequivocally documented the twofold disparity in low birth weight and preterm delivery between African-American and white families. As antecedents of infant mortality the demand for their resolution is unquestionable. Theoretical relationships

among stress, self-esteem and racism have been presented. In the studies cited, relationships between maternal stress and low birth weight and preterm delivery have been supported. What has been studied minimally are the relationships between stress, low birth weight and preterm delivery for the African-American woman.

Self-esteem was proposed as a factor relating negatively to stress, and targeted in the literature as warranting specific attention in the African-American population though not studied in terms of low birth weight and preterm delivery. Racism was presented as a factor in differential health care outcomes and treatment. A myriad of variables have been explored in research related to preterm delivery and low birth weight in African-American childbearing women. Bold vision is mandated in research related to components not previously explored in the differential African-American childbearing outcomes. If we control for age, education, economic status, health status and still obtain a significant differential outcome between African-American and white birth weight statistics, then we must conclude that there are determinants present which we have not considered. The factors of stress, self-esteem and racism, are thus proposed.

CHAPTER THREE

METHODOLOGY

A discussion of the methods used in this study will include the theoretical definitions of the variables, research design, description of the research settings, sample, data collection methods and data analysis procedures.

Definitions

1) Stress is a person-environment relationship which is appraised by the person as taxing and is a daily hassle as opposed to a major life event (Lazarus & Folkman, 1984).

2) Self-esteem is the self evaluation of worth (Rosenberg, 1965).

3) Racism is "a relatively constant pattern of prejudice and discrimination between one party who is idealized and favored and another who is devalued and exploited in a common relationship" (Pinderhughes, 1973, p. 61). Institutional racism exists in established institutions or organized structures within the society (Barbarin, Good, Pharr, & Siskind, 1982; Carmichael & Hamilton, 1967). Perceived racism is the individual or group perception of differential treatment, experiences and attitudes (Bowe, 1989).

4) Low birth weight (LBW) is the weight of a liveborn infant with a birth weight of 2500 grams (5 1/2 pounds) or less (Institute of Medicine, 1985).

5) Very low birth weight (VLBW) is the weight of a liveborn infant with a birth weight of 1500 grams or less (Institute of Medicine, 1985).

6) Pre-term delivery is that delivery which occurs prior to thirty-seven weeks gestation (Institute of Medicine, 1985).

7) Last menstrual period (LMP) is the date of onset of the last period (Pritchard & MacDonald, 1980).

8) Expected date of confinement (EDC) is 40 weeks or 280 days from the first day of the last normal menstrual period (Pritchard & MacDonald, 1980).

9) A nullipara is a woman who has never completed a pregnancy to the stage of viability. She may or may not have aborted previously (Pritchard & MacDonald, 1980, p. 304).

10) Term pregnancy is a pregnancy in which at least 37 weeks but less than 42 weeks from the onset of the last menstrual period have passed (Pritchard & MacDonald, 1980).

Research Design

A descriptive study using a pre- and post-assessment design (prior to and after childbirth) was conducted utilizing convenience sampling. A representative group from the population of interest (African-American childbearing women) was selected for observations on at least two occasions (Woods & Catanzaro, 1988). Convenience sampling, a nonprobability procedure, using individuals who were easy to identify and contact (Woods & Catanzaro, 1988) was done. The final sample consisted of the first 135 consecutive African-American nulliparous pregnant women who completed an initial assessment at one time during pregnancy and had a documented birth weight and gestational age of the newborn.

Research Setting

The site for the study was a large health maintenance organization (HMO) hospital in the California bay area. The site served a large number of African-American clients. A representative number of clients had third party reimbursement and thus did not represent the most impoverished families in the area, thereby decreasing poverty as a confounding variable. The frequency of low birth weight and preterm delivery was adequate at this site. Verbal communication with the Medical Research Economics Regional Office (Walters, 1989) documented that the institution had a total of 2,962 births in 1988. African-American births were 1,181 (40%) and white were 756 (25.5%). Total low birth weight births were 262 (8.8%). African-American low birth weight births were 148 (56.5% of LBW births). White low birth weight births were 60 (23% of LBW births). The total preterm deliveries in 1988 were 495 (16.7% of the total births). African-American preterm deliveries were 242 (49% of the total preterm births). White preterm deliveries were 126 (25.5% of total preterm births).

Thus in 1988 of over half (56.5%) of the low birth weight births were African-American, twice the percent of white births (23%). African-American preterm deliveries were almost twice (49%) of the total preterm deliveries compared with half that amount (25.5%) of the white preterm births. These statistics supported the selection of this site where there was: 1) an adequate sample; 2) an adequate number of low birth weight and preterm births; and 3) documented incidence of a twofold differential in African-American/white low birth weight and preterm delivery rates.

The specific recruitment site selected was the low risk prenatal clinic. In this setting low risk pregnant women receive prenatal care

from OB-GYN Nurse Practitioners. OB-GYN Nurse Practitioners operate under specified protocols with physician consultation available when necessary. When a pregnant woman is determined to be no longer low risk she is transferred to the high risk clinic and followed by obstetricians.

The low risk prenatal clinic at the HMO was selected as the study site for the following reasons: 1) the clientele represented medically uncomplicated pregnant women; 2) the clientele represented a working/middle class population which included some poor families without the severe deprivation represented in city or county facility (Green, 1990a); 3) the clientele though not representative of all African-American families presented a comparable segment; 4) the confounders occurring with the addition of other sites would have required an extensively larger sample; and 5) the potential for future research related to low birth weight and preterm delivery at this site was considerable.

Sample

In this section matters related to the sample will be discussed. Human subjects protocol, power, size, nature of the sample and inclusion criteria are reviewed.

Human Subjects Assurance

The Committee on Human Research, University of California, San Francisco approval to involve humans as research subjects #H1778-05463-01 was secured on May 23, 1990 (see Appendix A). Victor P. Chin, MD, FACOG, Chief, Department of OB-GYN and Director of Ob-Gyn Residency Program granted approval for the project to access potential participants from the HMO clinic site (see Appendix B).

Power, Size and Nature of Sample

Power analysis was calculated prior to data collection to determine the appropriate sample size (Cohen, 1988). The first aim of the proposed hierarchical multiple regressions (Hypothesis 1) was to determine the unique contribution of each one of the three social-political variables (stress, self-esteem and racism) in explaining variations in birth weight and gestational age of the newborn after five demographic variables (age, education, income, marital status and weeks gestation at the time of interview) had been accounted for. The second aim of the proposed hierarchical multiple regressions (Hypotheses 2,3 & 4) was to determine interrelationships among the social-political variables after the five demographic variables had been accounted for. The squared semi-partial for the three social-political variables (stress, self-esteem and racism) would be determined. If seven variables of the eight variables accounted for 13% of the variance in the outcome measure, a sample size of 135 would be necessary. This sample size would be required to detect an unique contribution of an additional 5% explained variance due to the remaining independent variable of interest with an alpha of .05 and desired power greater than .80. Explaining a total of 18% of the variance is considered a medium effect according to Cohen (1988). The investigator considers a unique contribution of at least 5% to be of practical or clinical significance. A total of 165 participants were recruited to allow for a 20% attrition rate.

Induction procedures were incorporated in the design. Interviews were scheduled during regular prenatal visits for maximum convenience to potential participants. This convenience for the participant increased external validity by reducing the bias from the interaction of selection

and treatment (Cook & Campbell, 1979). Recruitment strategies did not lead to the selection of a particular group as volunteers within the target class of interest. The interview which coincided with a regular prenatal visit did not place undue strain on participants. The participants were interviewed one time during the pregnancy by the investigator or the research assistant. The interview consisted of completing a question booklet and took less than 30 minutes. Participants were aware that the investigators had access to their medical records and that the weight and the gestational age of the baby at birth would be recorded from the birth log book in labor and delivery or the medical records (see Consent Form for Research Subject, Appendix C).

Inclusion Criteria

The aim of the sampling procedure was to obtain a group of low risk African-American prenatal women for whom disparities in the weight and gestational age of the baby at delivery could not be accounted for by previous high risk conditions. The inclusion criteria determined by chart review prior to the time of induction were:

1. African-American
2. Nulliparous with a viable fetus
3. Between 18 and 40 years old
4. United States born
5. Prior to 37 weeks gestation
6. Able to read and write English
7. Low risk medical and obstetrical status

Data Collection Methods

Data collection methods included an initial chart review, an interview using four fixed-format instruments and a final review of the delivery log book and/or medical records.

Chart Review

An initial chart review was performed prior to induction to determine which women, scheduled for a prenatal visit that day, fit the study criteria and could be approached for consent to participate. Information obtained from the chart at this review included race, age, parity, risk status, last menstrual period (LMP), expected date of confinement (EDC), weeks gestation at that visit (see Appendix D).

Following the prenatal appointment, the prospective participant was asked if she would like to participate in the study. If she agreed she was requested to read and sign the consent form (see Appendix C). The investigator co-signed and a copy of the consent form was given to the participant. The interview was conducted in a private office where the participant was instructed to read the statements in each of four sections and answer as she felt. Upon conclusion of the interview the participant was asked if she had any comments which were noted by the investigator on the last page of the interview booklet. She was thanked for her cooperation in the study. Following her exit from the clinic a second prenatal chart review was conducted. Questions 8 through 11 on the demographic sheet (Appendix E, p. 1) were filled out by the investigator. Any medical or obstetrical complications, drug, alcohol or tobacco use or other pertinent information was noted. If the father of the baby was

identified in the chart it was documented as was his presence at the visit. In addition the provider who saw the client and the investigator who conducted the interview were identified.

A third review of records was conducted following delivery where birth data was retrieved from the delivery log book or the medical records. Birth weight in grams and pounds, gestation by weeks, length in centimeters and inches, and complications were recorded (see Appendix F).

Instruments

A demographic sheet and three instruments comprised the interview booklet (see Appendix E) that each participant completed. The instruments were the Rosenberg Self-Esteem Scale (Rosenberg, 1965), the Perceptions of Racism Scale (Green, 1990b) and the Hassles Scale (Lazarus & Folkman, 1989).

Rosenberg Self-Esteem Scale

This is a 10-item, 4 point Likert scale from strongly agree to strongly disagree which measures the self acceptance aspect of self-esteem. It was designed for conciseness and can be completed in 5 minutes. The instrument consists of six subscale scores: 1) Scale Item I - items 1, 2 and 3 ; 2) Scale Item II - items 4 and 5; 3) Scale Item III - item 6; 4) Scale Item IV - item 7; 5) Scale Item V - item 8; and 6) Scale Item VI - items 9 and 10. These revised 6 scale scores are treated as 6 items on the self-esteem scale. Only 6 items are used for calculating reliability estimates. Total scores rank from six to zero, six signifying high low self-esteem.

The initial sample for the validation of the instrument was 5,024 randomly selected junior and senior high school students in New York City. Silber and Tippett (1965) reported correlations from .56 to .83. Though the scale has had widespread use, its generalizability to an African-American childbearing women can be questioned. However, as no scale existed which specifically measured self-esteem in African-Americans and as the scale was developed in urban school settings and included African-American youth in the sample, the limitations did not outweigh the utility in the current study.

The Perceptions of Racism Scale

No instrument was found which measured perceptions of racism. This necessitated the development and piloting of an instrument prior to the current study. The scale was developed containing 20 items answered on a 4 point Likert scale. The Committee on Human Research, University of California, San Francisco, approved the application to involve humans as research subjects in a pilot survey - Perceptions of Racism on January 10, 1990, #H1778-05463-01 (see Appendix G). This instrument was piloted on a sample of African-American women (N=117).

The items included on the Perceptions of Racism Scale came from two sources. A field interview study (Bowe, 1989) resulted in the documentation and analysis of statements by African-American childbearing women related to pregnancy, health care and race. Several of these statements were revised and included in the instrument (Items 1, 2, 4, 6, 7, 8, 9, 10, 16, 17, and 19). A second source was the Harris Polls (Harris, 1984). Items from selected polls were included (Items 12, 14, 15, 18, 20). A review by a consultant group of African-American nurse-midwives was a final validity check of the items prior to piloting the instrument.

A convenience sample of African-American women (N=117), 18 years of age and older was surveyed from selected church and community organizations. Participation was voluntary and confidential as no names were requested. An information sheet, explaining the purpose of the survey was given to each participant (see Appendix H).

The mean age of the sample was 47.5 years. Twenty-eight percent of the women were college graduates (M = 14.78 years of education). Fifty percent of the sample had a total family income of over $2,200 per month. Sixty-three percent of the women were employed full-time (n=71). In the sample 3.5% were pregnant (n=4), while the 96% (n=110) were not. The largest group were married (n=52). Twenty-six percent of the women had no children (n=30) while 74% had at least one child. Forty-two percent of the sample worked in a health care setting (n=48), while 58% did not (n=66). In summary, the sample was educated, employed, ranging in age from 20 to 80 years with the mean age in the mid forties (see Table 7).

The maximum total score for the instrument is 80 points (20 X 4), indicating the greatest perception of racism. The sample mean was 59.28. Alpha reliability for the total scale was .88. Principal components factor analysis with variamax rotation resulted in two subscales that explained 34% of the scale variance. First was a scale assessing "General Perceptions of Racism." Ten items were loaded on this scale; the Chronbach's alpha reliability was .76. The second subscale assessed "Perceptions Related to Racism and Health and/or Health Care." Ten items were included on this subscale and the Chronbach alpha reliability was .86 (See Table 8). Post hoc tests showed no significant difference in total or subscale scores between subjects when employment, marital status or site was considered. As a result of the analysis all of the 20 items in the Perceptions of Racism Scale were retained.

Table 7

Pilot Study Demographics: Perception Scale

Total in Study (N)	117
African-American (N)	117

Age

Mean	47.54
SD	14.48

Categories (years)	Frequency	Percent
20-29	13	11%
30-39	15	13%
40-49	38	32%
50-59	21	18%
60-69	18	15%
70-80	8	7%
Missing	4	3%

Education (highest grade completed)

Mean	14.78
SD	3.00

Categories	Frequency	Percent
Grade School	2	2%
Some High School	3	2.5%
Completed High School	24	20.5%
1-3 years College	39	33%
Completed College	13	11%
Graduate School	31	26%
Missing	5	4%

Monthly Family Income

Mean = $1,701-2,200
Mode = >$2,201-2,600
Median = >$2,201-2,600

Categories	Frequency	Percent
$500 or less	4	3%
$501 to $900	12	10%
$901 to $1300	11	9%
$1,301 to $1,700	13	11%
$1,701 to $2,200	15	13%
$2,201 to $2,600	16	14%
over $2,600	40	34%
Missing	6	5%

Table 7 (continued)

Pilot Study Demographics: Perception Scale

Employment	Frequency	Percent
Full-Time	71	61%
Part Time	12	10%
Unemployed	3	3%
Student	7	6%
Disability	5	4%
Retired	14	12%
Missing	5	4%

Marital Status	Frequency	Percent
Never married	14	12%
Married	52	44%
Widowed	15	13%
Separated or Divorced	34	29%
Missing	2	2%

Number of Children

Mean	1.87
SD	1.8

Categories	Frequency	Percent
no children	30	26%
1-3	65	55.5%
4-6	16	14%
7-8	3	2.5%
Missing	3	2.5%

Worked in a Health Care Setting	Frequency	Percent
Yes	48	41%
No	66	56%
Missing	3	2.5%

Received Prenatal Care	Frequency	Percent
Yes	79	68%
No	31	26%
Missing	7	6%

The Hassles Scale

Stress was measured by the Hassles Scale (Appendix E). This instrument, a list of 117 hassles was demonstrated to be a better predictor of symptoms than the life events score which targets major stressful life events (Kanner, Coyne, Schaefer, & Lazarus, 1981). The participants used in the original study were middle-aged, predominantly white and from Alameda County. There was no instrument measuring stress which was specific to the sample in the current study. However, the concept of everyday hassles, that become stressors was congruent with the theoretical conception of stress in the lives of African-American childbearing women strengthening the generalizability of this instrument. Lazarus and Folkman (1989) reported on the stability of the Hassles Scale, a term they feel more appropriate than the reliability. In a study (Kanner et al., 1981) stability over a nine month period was demonstrated with monthly frequency scores (.79), which exhibited greater stability than severity scores (.48).

Data Analysis

The analysis for the study is organized as follows: descriptive statistics (means, standard deviations and frequencies) were be examined for all independent variables (age, education, income, marital status, weeks gestation at interview, stress, self-esteem and racism). Internal consistency reliability (Cronbach's alpha) was computed for the three social-political variables (stress, self-esteem, racism). The hierarchical multiple regressions determined: 1) if the proportion of variance in birth weight and gestational age of the newborn accounted for by

stress, self-esteem and racism is above that accounted for by the demographic variables (Hypothesis 1); 2) if the proportion of variance in stress accounted for by racism is above that accounted for by the demographic variables (Hypothesis 2); 3) if the proportion of variance in stress accounted for by self-esteem is above that accounted for by the demographic variables (Hypothesis 3); and 4) if the proportion of variance in self-esteem accounted for by racism is above that accounted for by the demographic variables (Hypothesis 4). The hierarchical multiple regressions proceeded as follows:

Hypothesis 1

Step One: Five demographic variables (age, education, income, marital status, and weeks gestation at interview) were entered into the model to determine their contribution as a set in explaining any variance in the outcome (birth weight and gestational age of the newborn).

Step Two: The social-political variables (stress, self-esteem and racism) were entered as a set: 1) to determine their contribution as a set in explaining any variance in the outcome; and 2) to determine the unique contribution of any one of them in explaining any variance in the outcome after everything else had been accounted for.

The regression was conducted for each of the two dependent variables (birth weight and weeks gestation of the newborn). The next multiple regression proceeded:

Hypothesis 2

Step One: Five demographic variables were entered into the model to determine their contribution as a set in explaining any variance in stress.

Step Two: Racism was entered into the model to determine its unique contribution in explaining any variance in stress after the demographic variables had been accounted for.

The next multiple regression proceeded:

Hypothesis 3

Step One: Five demographic variables were entered into the model to determine their contribution as a set in explaining any variance in stress.

Step Two: Self-esteem entered into the model to determine its unique contribution in explaining any variance in stress after the demographic variables were accounted for.

The last multiple regression proceeded:

Hypothesis 4

Step One: Five demographic variables were entered into the model to determine their contribution as a set in explaining any variance in self-esteem.

Step Two: Racism entered into the model to determine its unique contribution in explaining any variance in self-esteem after the demographic variables were accounted for.

This analysis: 1) determined the unique contribution of each of social-political variables (stress, self-esteem and racism after the seven remaining variables have been accounted for; 2) predicted theoretical relationships of these variables to birth weight and gestational age of the newborn: 3) predicted interrelationships among stress, self-esteem and racism after the demographic variables had been accounted for; and 4) developed a model illustrating the strength and direction of these relationships.

CHAPTER FOUR

RESULTS

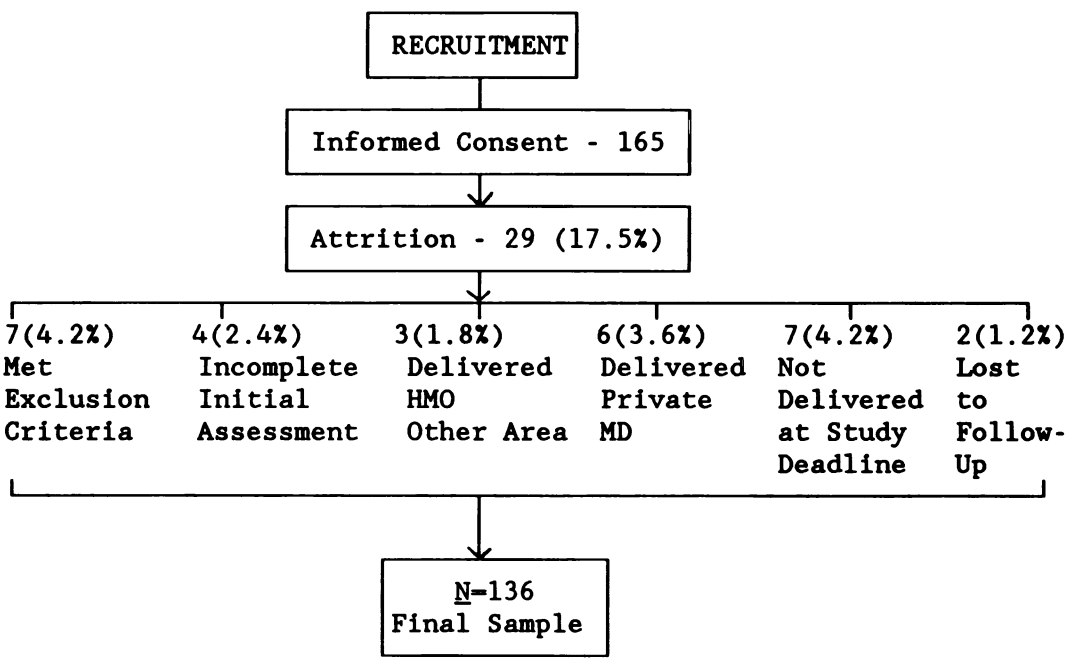
This chapter presents the findings of the data analysis. Sample characteristics are described along with a parametric analysis of the instruments is included. Four hypotheses are examined.

Sample Characteristics

A convenience sample of nulliparous, childbearing African-American women were interviewed (N=165). Complete data was collected from 136 participants, the sample size necessary for the desired power of .80 (see Table 8).

Table 8

Participant Recruitment Outcomes



In the final sample (N=136), the mean age was 24 years with a range from 18 to 39 years of age (see Table 9). The years of school completed ranged from 8th grade through graduate school education (M=13.5 years). The median total family income of the sample was $1,501 to $2,000 per month and 51% (n=69) of the families earned $2,000 monthly or less. The majority of the sample (73%, n=98) were employed; 35% (n=47) were married and 65% (n=91) were unmarried. Participants identified from one to eight persons in the household (M=2.7). The father of the baby was identified in 93% of the cases with 7% (n=10) missing. Fathers were present at this prenatal visit in 14.5% (n=19) of the interviews.

Table 9

Demographics of Sample

Total in Study (N)	136	(100%)
African-American (N)	136	(100%)

Age

Mean	24.40
SD	5.24
Range	18-39 years

Education (highest grade completed)

Mean	13.55
SD	1.78
Range	8-18 years

Categories	Frequency	Percent
Grade School	1	.7%
Some High School	5	3.7%
Completed High	45	33.1%
1-3 Years College	58	42.6%
Completed College	22	16.2%
Graduate School	5	3.7%

Table 9 (continued)

Demographics of Sample

Total Monthly Family Income

Mean = $1,501-$2,000
Mode = ≤ $2,000
Median = ≤ $2,000
Range = $500-over $4,000

Categories	Frequency	Percent
$500 or less	5	3.7%
$501 to $1,000	25	18.4%
$1,001 to $1,500	15	11.0%
$1,501 to $2,000	24	17.6%
$2,001 to $2,500	14	10.3%
$2,501 to $3,000	13	9.6%
$3,001 to $3,500	11	8.1%
#3,501 TO $4,000	12	8.8%
Over $4,000	17	12.5%

Martial Status

Categories	Frequency	Percent
Unmarried	89	65%
Married	47	35%

Weeks Gestation at Interview

Mean 23.54
SD 7.1
Range 11-36 weeks

Additional data was collected from the prenatal chart to further document a low risk sample. This included information used in the multiple regression (as weeks gestation at the time of the interview) and information not included in the regression analysis but potentially relevant to birth weight and gestational age outcomes. This included gravity, number of abortions, history of medical or obstetrical complications and alcohol, drug and tobacco use.

The weeks gestation at the time of the interview ranged from 11 to 36 weeks (M=23.5). The number of abortions (spontaneous or therapeutic) ranged from none to 5 (M=1.02). Seventy-five percent (n=100) of the women had their first prenatal visit in the first trimester of pregnancy (12 weeks or earlier). The majority of the medical records (86%, n=116) identified no medical or obstetrical complications. Among the remaining participants, a sub-sample of 4.4% (n=6) identified complications which did not require high risk management; another sub-sample (10%, n=13) identified complications which were not significant risk factors. Ninety-one percent (n=122) of the women denied alcohol use, while 7% (n=10) described some consumption prior to their knowledge of pregnancy, yet they stopped when pregnancy was confirmed. Eighty-seven percent (n=117) denied cigarette use and 96% (n=128) denied drug use. The range of the number of participants per provider was from 2 to 22 (median per provider=14). Sixty-eight percent (n=93) of the interviews were conducted by the investigator while 31% (n=43) were conducted by the research assistant.

Instrument Analysis

Analyses was performed to determine the reliability of the instruments used in the study.

The Hassles Scale

Stress was measured by the Hassles Scale and scored as the total number of hassles indicated by the participant. Chronbach's alpha reliability for the scale was 0.96. Nine factors from the original study were presented as subscales (Lazarus & Folkman, 1989, pp 37-39). These

factors were analyzed for this study. They were not used in scoring the current study as they did not represent reliable factors. The severity scores were not used as "frequency seems to be a more stable measure over time than severity." (Lazarus & Folkman, 1989, p.8; Kanner et al., 1981). The total score used for this study was the total number of hassles identified, irrespective of the severity. The ten most frequent hassles are listed in ascending order of occurrence in Table 10. A list from the original study (Lazarus & Folkman, 1989) is presented for comparison.

The Rosenberg Self-Esteem Scale

Self-esteem was measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965). Alpha reliability for the 6 items with N=136 participants was 0.51. The ten item scale is divided into six subscale scores which total from 0 to six with six indicating the lowest self-esteem. In the current study, Scale Item III, "I take a positive attitude toward myself," demonstrated no item scale correlation as this item was answered positively by all participants. Overall, the sample demonstrated high self-esteem (85% $\leq$ 1). Descriptive statistics for the Rosenberg Scale items are presented in Table 11.

Table 10

Ten Most Frequent Hassles: A Comparison

Current study, 1991 (N=136)	
Item	Mean [a]
1. Troubling thoughts about your future (5)	75.7
2. Concerns about weight (91)	74.3
3. Not getting enough sleep (72)	61.0
4. Not getting enough rest (71)	59.6
5. Crime (115)	58.8
6. Inconsiderate smokers (4)	58.1
7. Trouble relaxing (25)	56.6
8. Health of a family member (7)	55.1
9. Concerns about money for emergencies (12)	52.9
10. Concerns about getting ahead (101)	52.9

Kanner, et al., 1981 (N=100)	
Item	%Endorsing [b]
1. Concerns about weight (91)	52.4
2. Health of a family member (7)	48.1
3. Rising prices of common goods (70)	43.7
4. Home maintenance, inside (29)	42.8
5. Too many things to do (79)	38.6
6. Misplacing or losing things (1)	38.1
7. Yardwork or outside home maintenance (112)	38.1
8. Property, investments, or taxes (110)	37.6
9. Crime (115)	37.1
10. Physical appearance (51)	35.9

[a] Mean = mean percentage of people endorsing item on a single administration. Item numbers are in parenthesis.

[b] The "% Endorsing" represents the mean percentage of people checking the item each month averaged over the nine monthly administrations. Item numbers are in parentheses.

Table 11

Descriptive Statistics of Social-Political and Outcome Variables

Social-Political Variable	Mean	S.D.	Range	Total Score
Stress (Hassles Scale)	34.92	21.53	2-101	117
Self-Esteem (Rosenberg Self-Esteem Scale)	.52	.86	0-4	6
Racism (Perceptions of Racism Scale)	47.82	8.34	28-75	80
Dependent Variables				
Birth Weight in Grams	3226.11	661.76	610-4710	
Gestational Age in Weeks	39.43	2.75	26-44	

Perceptions of Racism Scale

Reliability for the Perceptions of Racism Scale (total score) was 0.91 for N=136 participants. Two subscale reliability scores were analyzed. The first subscale assessed perceptions of racism in health. Alpha reliability for this scale was 0.90. The second scale assessed general perceptions of racism. The alpha reliability for this subscale was 0.78. The mean total score for the study sample was 47.82 (80 indicating the highest perception of racism). The mean total score for the pilot sample was 59.30 indicating a higher perception of racism than the current study. A comparison of results from the pilot study (N=117) and the present study (N=136) indicated significantly different responses in both groups for all items ($p<0.001$) except items 16 and 20. This difference between the two groups persisted even when the age of the pilot group was controlled to range between ages 18 and 40 years.

Dependent Variables

Low birth weight and preterm delivery have been operational as the birth weight in grams and gestational age of the newborn in weeks. The descriptive statistics for the social-political and the dependent variables are presented in Table 11.

Ten variables were analyzed in the study. The five demographic variables were: 1) the age of the participant in years (AGE); 2) the education of the participant in years (EDUCATION); 3) the total monthly income (INCOME); 4) married or unmarried participant (MARITAL STATUS); and 5) weeks gestation of participant at the interview (GESTATION AT INTERVIEW). The three social-political variables were: 1) total score of Perception of Racism Scale (RACISM); 2) total score on Rosenberg's Self-Esteem Scale (SELF ESTEEM); and 3) total number of hassles identified on the Hassles Scale (STRESS). The two dependent variables were: 1) birth weight of the newborn in grams (BIRTH WEIGHT IN GRAMS): and 2) gestational age of the newborn in weeks (GESTATIONAL AGE IN WEEKS AT DELIVERY).

Birth weight in grams and gestational age in weeks are the operational variables for the theoretical concepts of low birth weight and preterm delivery. Correlations were run on the study variables and are presented in Table 12.

Table 12

Correlation Matrix for Study Variables

	AGE	ED	INC	MAR	WEK	RAC	EST	STR	GRA	GES
Age (AGE)	1.00	.65	.38	.51	-.01	.37	-.12	-.11	-.13	-.14
Education (ED)		1.00	.46	.41	-.01	.33	-.22	-.25	-.10	-.09
Income (INC)			1.00	.38	.12	.18	-.20	-.33	.21	.13
Marital Status (MAR)				1.00	-.02	.29	-.14	-.26	-.08	-.04
Weeks Gestation at Interview (WEK)					1.00	.09	.06	.02	.08	.07
Racism (RAC)						1.00	-.03	.14	-.10	-.06
Self-Esteem (EST)							1.00	.36	.05	-.01
Stress (STR)								1.00	-.14	-.02
Birth Weight in Grams (GRA)									1.00	.78
Gestational Age in Weeks at Delivery (GES)										1.00

$r \geq .18$ $p < .05$
$r \geq .22$ $p < .01$

Analysis of Hypotheses

Four hypotheses were tested and will be discussed in the order in which they were presented.

1. **Stress and racism will be negatively related and self-esteem will be positively related to birth weight and gestational age of the newborn after the effects of the demographic variables (age, income, education, marital status and weeks gestation at the time of the interview) have been accounted for (Tables 13, and 14).**

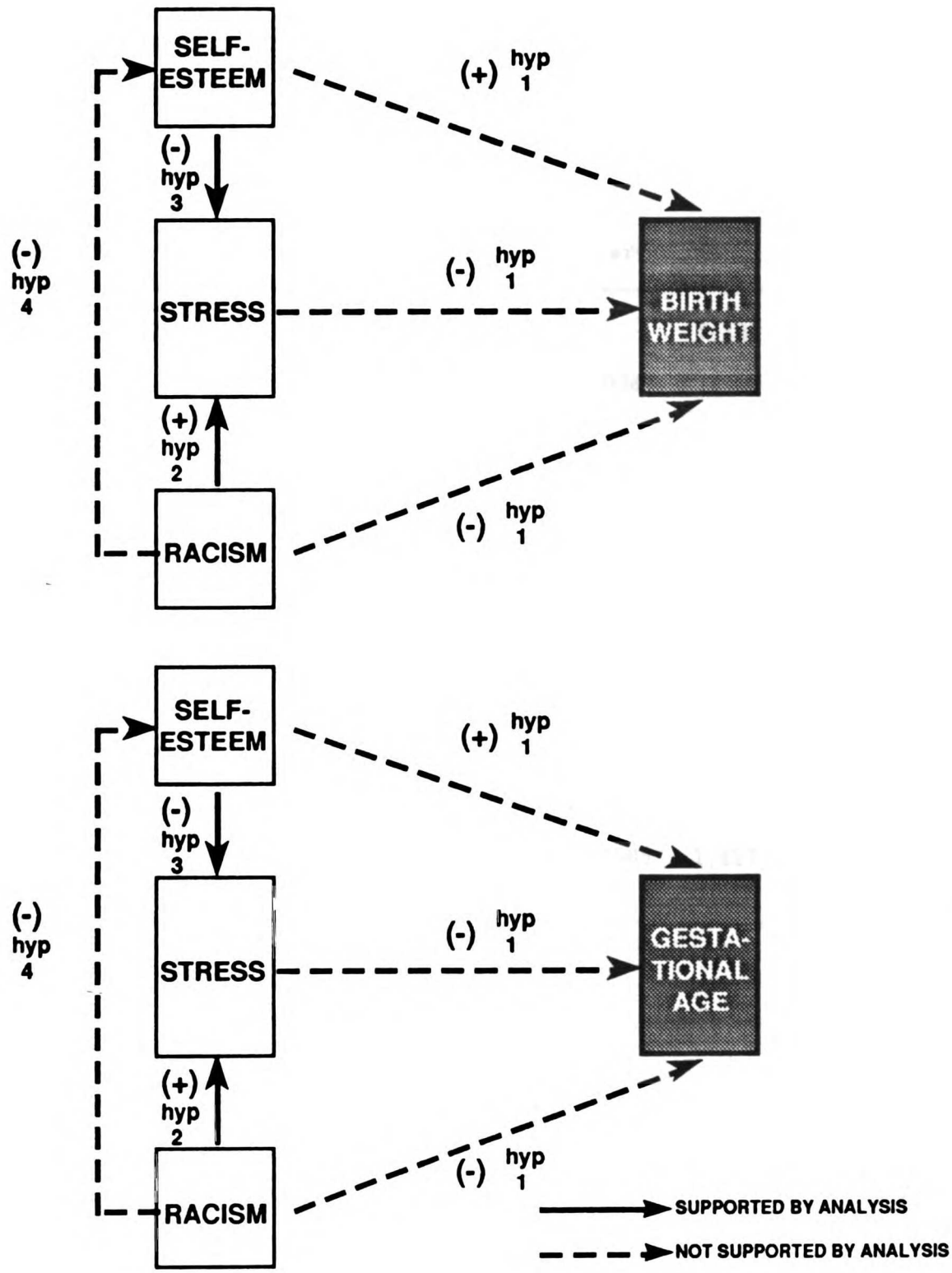


Figure 2. Results of the analysis.

Table 13

Summary Table of Hierarchical Multiple Regression

Hypothesis 1

Dependent Variable: Birth Weight in Grams

Step	Source	Cum R^2	R^2 Change	sr^2	df	F	P
1.	Demographic Variables	.1133	.1133		5,130	3.321	<.01
	Age			.0089	1,130	1.309	NS
	Education			.0103	1,130	1.503	NS
	Income			.0895	1,130	13.117	<.001
	Marital Status			.0056	1,130	0.820	NS
	Weeks Gestation At Interview			.0008	1,130	.121	NS
2.	Social-Political Variables						
		.1341	.0209		3,127	1.010	NS
	Stress			.0143	1,127	2.103	NS
	Self-Esteem			.0085	1,127	1.239	NS
	Racism			.0005	1,127	.080	NS

Table 14

Summary Table of Hierarchical Multiple Regression

Hypothesis 1

Dependent Variable: Gestational Age in Weeks

Step	Source	Cum R^2	R^2 Change	sr^2	df	F	P
1.	Demographic Variables	.0632	.0632		5,130	1.753	NS
	Age			.015	1,130	2.141	NS
	Education			.0033	1,130	.464	NS
	Income			.0376	1,130	5.212	<.05
	Marital Status			.000	1,130	.002	NS
	Weeks Gestation At Interview			.0008	1,130	.193	NS
2.	Social-Political Variables						
		.0641	.0009		3,127	.041	NS
	Stress			.0007	1,127	.099	NS
	Self-Esteem			.0002	1,127	.032	NS
	Racism			.0003	1,127	.042	NS

The regression analyses were run twice, once for each dependent variable (birth weight and weeks gestation of the newborn).

In the multiple regression analysis predicting birth weight in grams (Hypothesis 1), two sets of variables were entered in a hierarchical fashion. In Step 1, demographic variables accounted for 11% of the variance in birth weight. Within the set, income was the sole significant predictor. In Step 2, the social-political variables did not explain any

additional variance in birth weight. The first hypothesis predicting birth weight was not supported (Table 13).

In the multiple regression analysis predicting gestational age of the newborn in weeks (Hypothesis 1), two sets of variables were entered in a hierarchical fashion. In Step 1, demographic variables accounted for 6% of the variance in gestational age in weeks. Within the set, income was the sole significant predictor. In Step 2, the social-political variables did not explain any additional variance in gestational age at delivery. The first hypothesis predicting gestational age was not supported (Table 14).

2. **Racism will be positively related to stress after the effects of the demographic variables have been accounted for.**

In the multiple regression analysis predicting stress from racism (Hypothesis 2), two sets of variables were entered hierarchically. In Step 1, the demographic variables accounted for 16% of the variance in stress. Within the set, income and marital status were significant predictors. In Step 2, racism accounted for 6% of the variance in stress above the demographic variables and demonstrated a positive relationship with stress. The second hypothesis was supported by the analysis (see Table 15).

Table 15

Summary Table of Hierarchical Multiple Regression

Hypothesis 2						
Dependent Variable: Stress						
Step Source	Cum R^2	R^2 Change	sr^2	df	F	P
1. Demographic Variables	.1600	.1600		5,130	4.954	<.001
Age			.0224	1,130	3.465	NS
Education			.0177	1,130	2.739	NS
Income			.0490	1,130	7.591	<.01
Marital Status			.0260	1,130	4.019	<.05
Weeks Gestation At Interview			.0023	1,130	0.362	NS
2. Social-Political Variables						
Racism	.2206	.0606		1,129	10.025	<.01

3. **Self-esteem will be negatively related to stress after the demographic variables have been accounted for.**

In the multiple regression analysis predicting stress from self-esteem (Hypothesis 3), two sets of variables were entered hierarchically. In Step 1, the demographic variables were a significant predictor of stress and accounted for 16% of the variance in stress. Within the set income and marital status were significant predictors. In Step 2, self-esteem accounted for 8% of the variance in stress above the demographic variables. The hypothesized negative relationship between self-esteem and stress was supported by the analysis (Table 16).

Table 16

Summary Table of Hierarchical Multiple Regression

Hypothesis 3						
Dependent Variable: Stress						
Step Source	Cum R^2	R^2 Change	sr^2	df	F	P
1. Demographic Variables	.1600	.1600		5,130	4.954	<.001
Age			.0224	1,130	3.465	NS
Education			.0177	1,130	2.739	NS
Income			.0490	1,130	7.591	<.01
Marital Status			.0260	1,130	4.019	<.05
Weeks Gestation At Interview			.0023	1,130	.362	NS
2. Social-Political Variable						
Self-Esteem	.2360	.0759	.0759	1,129	12.823	<.001

4. **Racism will be negatively related to self-esteem after the effects of the demographic variables have been accounted for.**

In the multiple regression analysis predicting self-esteem from racism (Hypothesis 4), two sets of variables were entered hierarchically. In Step 1 the variance in self-esteem explained by the demographic variables was not significant. In Step 2 the variance in self-esteem explained by racism was not significant. The fourth hypothesis was not supported by the analysis (Table 17).

Table 17

Summary Table of Hierarchical Multiple Regression

Hypothesis 4

Dependent Variable: Self-Esteem

Step	Source	Cum R^2	R^2 Change	sr^2	df	F	P
1.	Demographic Variables	.0703	.0703		5,130	1.965	NS
	Age			.0037	1,130	0.511	NS
	Education			.0204	1,130	2.854	NS
	Income			.0125	1,130	1.754	NS
	Marital Status			.0015	1,130	0.211	NS
	Weeks Gestation At Interview			.0051	1,130	0.707	NS
2.	Social-Political Variables						
	Racism		.0015		1,129	0.206	NS

An analysis of newborns in the sample with birth weights ≤ 2500 grams and/or gestation less than 37 weeks was performed. As this subgroup represented the study outcome of low birth weight and preterm delivery, it mandated closer examination. Twelve newborns weighted ≤ 2,500 grams and twelve newborns were less than 37 weeks gestation. Six newborns were both low birth weight and preterm (≤ 2,500 grams and < 37 weeks gestation). Mann Whitney tests comparing these groups to the larger sample found no significant differences in age, education, income or weeks gestation at the time of interview. Two neonatal deaths occurred in this group.

CHAPTER FIVE

DISCUSSION

The current examination of three factors, stress, self-esteem and racism and their relationships with birth weight and gestational age of the newborn in a sample of African-Americans childbearing women is completed. What remains is the discussion. This includes the interpretation of findings and the critique in which the strengths, limitations and alternate explanations are presented. The implications for nursing and projected future research follow.

Interpretation of Findings

Previous studies have investigated factors related to low birth weight and preterm delivery in African-Americans. While a multitude of factors were contributory, none accounted for the two-fold differential between African-Americans and whites in low birth weight and preterm delivery. In studies where identified risk factors as age, income, weight, education, marital status, month of onset of prenatal care were considered the African-American/white discrepancy remained (Collins & David, 1990; Gould & Leroy, 1988; Hoff et al., 1985; Kessel, Villar, Berendes, & Nugent, 1984; Klebanoff & Yip, 1987; Kleinman & Kessel, 1987; Miller & Jekel, 1987; Shino et al., 1986). In studies related to infant mortality, the associations with high African-American low birth weight and infant mortality were reinforced (Binken, Williams, Hogue, & Chin, 1985; Berman, Shapiro, Hogue, & Halpin, 1987).

What are the reasons for the high low birth weight rate in African-Americans? What factors impinge on the lives of African-Americans that are different from whites in this nation? How do these factors relate to poor birth outcome, specifically low birth weight and preterm delivery and the resultant infant mortality? Why in a nation with unequivocal health resources and technology is African-American low birth weight and infant mortality, and thereby, total infant mortality higher than nineteen other nations (United Nations, 1990)? In attempt to address some of these questions four hypotheses were proposed and tested. The results of the study will be discussed in relation to these hypotheses.

Hypothesis 1

Stress and racism will be negatively related and self-esteem will be positively related to birth weight and gestational age of the newborn after the effects of the demographic variables (age, income, education, marital status, weeks gestation at the time of interview) have been accounted for. These hypotheses were not supported by the analysis. No significant relationships were demonstrated among stress, self-esteem and racism with either birth weight or gestational age of the newborn. The demographic variables accounted for 11% of the variance in birth weight and 6% of the variance in gestational age of the newborn. Of the demographic variables, income was the sole significant predictor. The relationship of income with birth weight and gestational age of the newborn is not surprising and has been documented in other studies (Collins & David, 1990; Institute of Medicine, 1985). However, the racial gap remains across income levels (Gould & Leroy, 1988; Institute of Medicine, 1985; Miller & Jekel, 1987). Why did stress, self-esteem and

racism not demonstrate significant relationships with birth weight and gestational age of the newborn? The possibilities include inaccurate conceptualization, insufficient methodology, problems with instrumentation or sampling or simply that these factors are not valid. No studies have examined relationships among stress, self-esteem and racism in a sample of African-American childbearing women. Thus the merit and the ramifications of findings related to Hypothesis 1 are vital. These will be discussed in the study critique.

Hypothesis 2

Racism will be positively related to stress after the demographic variables have been accounted for. The set of demographic variables accounted for 16% of the variance in stress. Within the set income and marital status were the only significant predictors. Racism accounted for 6% of the variance in stress above the demographic variables. Hypothesis 2 was supported, reaffirming a positive relationship between racism and stress. What does this mean? It means that racism and stress are related. It means that if the results of the sample are generalizable we can correlate stress with racism. The conceptual and methodological issues will be discussed in critique of the study.

Hypothesis 3

Self-esteem will be negatively related to stress after the demographic variables have been accounted for. The set of demographic variables accounted for 16% of the variance in stress. Within the set, income and marital status were the only significant predictors. Self-

esteem accounted for 8% of the variance in stress above the demographic variables. Though the relationship of self-esteem to stress was positive, a high self-esteem score indicated low self-esteem. Thus Hypothesis 3 was supported. As in Hypothesis 2, if the results are generalizable to the population, high stress can be related to low self-esteem, or the inverse in African-American childbearing women. The conceptual and methodological issues will be discussed in the critique.

Hypothesis 4

Racism will be negatively related to self-esteem after the effects of the demographic variables have been accounted for. In the analysis the variance in self-esteem explained by racism after accounting for the demographic variables was not significant. Hypothesis 4, proposing a negative relationship between racism and self-esteem was not supported. However from an historical and present perspective, the relationship between self-esteem and racism is valid. In the critique, questions related to hypothesis 4 and conceptualization, methodology, instrumentation and sampling will be explored.

Study Critique

Strengths

The major strength of the study is that important questions were raised related to differential African-American low birth weight and preterm delivery rates. This strength can be subdivided in specific areas. First, a group of low risk childbearing women was sampled as relationships in this group would not be confounded by known risk factors.

If significant relationships between the social-political factors (stress, self-esteem and racism) with birth weight and gestational age of the newborn occurred in those women least at risk, then potential predictors would be more apparent in high risk women.

Second, social-political factors, particularly self-esteem and racism, not previously considered in the literature were hypothesized as having relationships with birth weight and gestational age of the newborn. The literature relating to low birth weight, preterm delivery and infant mortality due to its epidemiological focus investigates variables that are retrievable from vital statistics data. A multitude of social, political and economic factors are omitted. Stress has been studied in relationship with birth outcome, but the research has not targeted African-American childbearing women. Self-esteem and racism while investigated in relationships with health outcomes have not been the focus of low birth weight and infant mortality studies. Thus, this study introduced three factors not previously considered. Stress, self-esteem and racism were hypothesized to relate to the critical low birth weight/preterm delivery disparity in African-Americans.

Third, the interrelationships among three social-political variables were examined. Racism and self-esteem, while not demonstrating relationships with birth weight and gestational age of the newborn did demonstrate significant relationships with stress (Hypothesis 2 and 3). This finding mandates continued research related to these inter-relationships and their effect on health outcomes.

Fourth, as no instrument was found which measured perceptions of racism, an instrument with good reliability was piloted in a preliminary study (Green, 1990b) and used in the current study. This instrument is a

forerunner of continued development of instruments to measure factors related to low birth weight, preterm delivery and other health outcomes in African-Americans. Philosophically this instrument development challenges the concept that measurements developed on and for the white population are equally transferable to other racial and national groups.

Limitations

The limitations of the study are as follows. First, the final sample of 136 African-American prenatal clients was selected by convenience rather than random sampling procedures. This method was used largely for expediency understanding its drawbacks. Were the participants any different from the non-participants? In an effort to address this question a daily diary was kept indicating the number of eligible participants, the no-shows in the clinic, those unable to participate, and those refused. In a review of twenty-two interview days there were a total of 84 eligible participants. Of those 15 (18%) did not keep their appointments (no-show). Ten (8%) stated they were unable to participate (usually due to work). The remainder (n=59, 74%) participated in the interview. During the total interview period only two women refused to participate. Of the women who were unable to be interviewed all stated that they would available at future appointments. As the interview period lasted for four months, it was assumed that those women later participated although no records were kept to verify this assumption. The assumption is that those women who participated in the interview were no different from those who did not, minimizing selection as a validity threat.

A second limitation of the study may be the instruments used. Can stress be accurately measured by the Hassles Scale, self-esteem by the

Rosenberg Self-Esteem Scale or racism by the Perceptions of Racism Scale? The Hassles Scale was initially tested on a white middle-aged sample of men and women in Alameda County. The comparative list of the ten most frequent hassles (Chapter 4, Table 10) indicates some similarities and differences in the original and the current study. Concerns about weight, crime and health of a family member were mentioned by both groups. Getting enough sleep and rest were indicated in the current study and may be a function more of pregnancy than race. However the original study (Kanner et al., 1981) indicated specifics of home maintenance, yardwork, property and investments as hassles. These were not identified in the top ten of the current study. In Chapter 4 (Table 10) the mean frequency of the tenth hassle (52.9) in the current study was similar to the percentage endorsing the first ranked item (52.4) in the Kanner study. No statistical comparison can be made from this data, but a difference in the two groups both in types of items and the numbers endorsing is suggested.

The mean frequency of hassles in the current study was 34.92 (Table 10). The mean frequency of hassles from the Kanner sample of men and women aged 45- 64 years was 20.5. The mean frequency in the MacPhee sample of 432 college students was 27.6 (Lazarus & Folkman, 1989, p. 10). The current study demonstrated a greater frequency of hassles than either of these two groups although a statistical comparison cannot be made. Greater stress in the current sample is suggested from the data.

The Rosenberg Self-Esteem Scale showed a low Cronbach's alpha reliability (0.51). This indicates poor internal consistency (Wood & Catanzano, 1988). The sample demonstrated high self-esteem. Either this is an accurate representation and the participants had high self-esteem, or it is an inaccurate representation and reflects a lack of internal

consistency. Did the Rosenberg Self-Esteem Scale measure what it said it would measure? It will be necessary in subsequent work to examine other measurements of self-esteem to avoid the potential bias of a sole instrument. Additional qualitative work is warranted to explore the nature of self-esteem for the African-American childbearing woman.

The Perceptions of Racism Scale was piloted on a convenience sample of women from California bay area churches and other community groups (N=117). The pilot group demonstrated a higher perception of racism (M=58) than the current study (M=48). This difference between the two groups persisted even when the pilot group was controlled for age. In the Mann-Whitney and t tests for both groups, the 20 items except for items 16 and 20 demonstrated significant differences between the two groups (p<.000). One major dissimilarity between the two groups was that the pilot study women filled out the form anonymously, while the women in the current study were identified. In addition, the current study women were part of a health care system. Did the lack of anonymity influence their answers if they felt this would threaten their health care? More investigation is needed both in terms of improved instrumentation and/or the greater depth of meaning possible with a qualitative design.

Additional methodological limitations are apparent. Third, a one time measure during the prenatal period may not be sufficient, particularly as influences occurring during this time may cluster and are not necessarily static. A repeated measures design is warranted in future studies. Fourth, information obtained in a monitored health care setting as the HMO used in the study may be more "acceptable" and thus not reflecting accurately, the feelings of the respondent. Fifth, the limitations of the sample size and the setting reduce the study's

generalizability to other settings. Sixth, quantitative data while producing numbers and statistical significance does not result in feelings, attitudes or conceptions of the participants. Seventh, as low birth weight and preterm delivery do not occur in large numbers in the population, larger sample sizes or other outcome variables may be necessary to demonstrate significant relationships.

Alternative Explanations

Vicente Navarro (1990) discussed race and class in relation to mortality differentials in the United States. He reaffirmed that the health indicators for African-Americans are worse than whites. However he attributes part of this differential to class. "The growing disparity of wealth and income by class mainly, but not exclusively, explains the race differentials in morbidity and mortality" (p. 1240).

In the current study the sole predictor of birth weight and gestational age of the newborn was income. However, income has been an acknowledged factor in birth weight differentials. Class differentials among African-Americans indisputably contribute to differentials in health outcomes including low birth weight, preterm delivery and infant mortality (Institute of Medicine, 1985; Kliegman, Rottman, & Behrman, 1990; Schwethelm, Margolis, Miller & Smith, 1989). Yet, the twofold disparity between African-Americans and whites remains even when confounding social and economic variables, including income, are controlled (Kliegman, Rottman, & Behrman, 1990). Class differentials alone are not the sole contributing factor in the African-American/white low birth weight disparity. Racism, or what the individual or family experiences because of racism, is critical. The significant relationship demonstrated in the current study between racism and stress supports this conclusion.

Implications for Nursing

The current study of stress, self-esteem and racism as factors associated with low birth weight and preterm delivery has five implications for nursing. First, the study expands the scope of issues traditionally studied by nursing. The major low birth weight/infant mortality research is in epidemiology. Yet, the health of mothers, babies and their families is vital to nursing. Nursing research can and must include differentials in birth outcomes.

Second, the study expands possibilities for interdisciplinary research and practice including nursing, medicine, epidemiology, sociology and psychology. These related and interrelated disciplines can provide both research and intervention. Third, social-political factors not previously studied in relation to the low birth weight/preterm delivery disparity were considered. No significant relationships were found with these factors and birth weight and gestational age of the newborn. Their theoretical relevance as well as the documented interrelationships in this study mandate their continued investigation.

Fourth, the study deals with factors (racism and self-esteem) which have economic and political origins and demand economic and political solutions. This charges that theoretical modeling must be transformed into bold local and national intervention. Fifth, the study deals with the health of African-Americans where inadequate research and intervention has been initiated, and where health demands are critical. It mandates continued study aimed at more than knowledge accumulation. It mandates research aimed at change.

Future Research

This study directs future research in multiple ways. First, studies of low birth weight and preterm delivery in African-American families must be designed with larger samples and extended sites. This strengthens the possibility of demonstrating significant relationships. Second, the search for factors related to the African-American/white disparity must continue and increase. Answers are a part of an active solution. Third, studies related to instrumentation especially with factors as racism not previously measured must continue. Improved ability to measure variables reinforces the capability to assess their relevance. Fourth, intervention studies directed at improved birth weight and preterm delivery outcomes must increase. These intervention studies cannot be dependent on descriptive research, but designed as their correlative. Fifth, African-American researchers must strengthen their resolve in initiating and supporting research related to the health problems and solutions for African-Americans. The health and lives of African-Americans are at stake. Sixth, qualitative work must be incorporated in future studies to provide a more profound description of the thoughts, feelings and ideas of the participants. The participants are not simply the passive recipients but the active initiators for change.

At a time in this nation when untold money, resources and lives have been spent on war there is an incontestable need for equivalent resources to be used for improved health. The two-fold disparity between African-American and white low birth weight, preterm delivery and the resultant infant mortality demands action.

BIBLIOGRAPHY

Ahmed, R. (1989). Urban-suburban differences in the incidence of low birthweight in a metropolitan black population. Journal of the National Medical Association, 81(8), 849-855.

Alden, E. R. (1990). Commentary. Journal of Family Practice, 30(3), 287-288.

Allen, M. E., Nunley, J. C., & Scott-Warner, M. (1989). Recruitment and retention of black students in baccalaureate nursing programs. Journal of Nursing Education, 27(3), 107-116.

Antonucci, T. C., Peggs, J. F., & Marquez, J. T. (1989). The relationship between self-esteem and physical health in a family practice population. Family Practice Research Journal, 9(1), 65-72.

Aptheker, H. (1969). American Negro slave revolts. New York: International Publishers.

Arizmendi, T. G., & Affonso, D. D. (1987). Stressful events related to pregnancy and postpartum. Journal of Psychosomatic Research, 31, 743-756.

Baldwin, W. (1986). Half empty, half full; What we know about low birth weight among blacks. American Medical Association Journal, 255(1), 86-88.

Barbarin, O. A., Good, P. R., Pharr, O. M., & Siskind, J. A. (1982). Institutional racism and community competence. Rockville, Maryland: U.S. Department of Health and Human Services.

Barnes, E. J. (1980). The black community as the source of positive self-concept for black children: A theoretical perspective. In R. L. Jones (Ed.), Black Psychology (pp. 106-130). New York: Harper and Row.

Bennett, L. (1982). Before the Mayflower. New York: Viking Penguin Inc.

Berendes, H. W. (1987). Current issues in perinatal epidemiology. Yale Journal of Biology and Medicine, 60, 349-357.

Berman, S. M., Shapiro, E., Hogue, C. J., & Halpin, G. J. (1987). Increased infant mortality in Jersey City. Public Health Reports, 102(4), 404-409.

Billingsley, A. (1988). Black families in white America. New York: Simon & Schuster Inc.

Binkin, N. J., Rust, K. R., & Williams, R. L. (1988). Racial differences in neonatal mortality: What causes of death explain the gap? American Journal of Diseases of Children, 142(4), 434-440.

Binkin, N. J., Williams, R. L., Hogue, C. J., & Chen, P. M. (1985). Reducing black neonatal mortality: Will improvement in birth weight be enough? American Medical Association Journal, 253(3), 372-375.

Blau, A., Slaff, B., Eason, K., Welkowitz, J., Springarn, J., & Cohen, J. (1963). The psychogenic etiology of premature births: A preliminary report. Psychosomatic Medicine, 25(3), 201-211.

Blendon, R. J., Aiken, L. H., Freeman, H. E., & Corey, C. R. (1989). Access to medical care for black and white Americans. American Medical Association Journal, 26(2), 278-281.

Boone, M. S. (1982). A socio-medical study of infant mortality among disadvantaged blacks. Human Organization, 41(3), 227-236.

Boone, M. S. (1985). Social and cultural factors in the etiology of low birth weight among disadvantaged blacks. Social Science Medicine, 20(10), 1001-1022.

Bowe, N. (1989). African-American childbearing women: Views on pregnancy, health care and race. Unpublished manuscript, University of California, School of Nursing, San Francisco.

Boyce, W. T., Schaeffer, C., Harrison, R., Haffner, W. H., Lewis, M., & Wright, A. L. (1986). Social and cultural factors in pregnancy complications among Navajo women. American Journal of Epidemiology, 124(2), 242-253.

Bureau of Maternal and Child Health and Resources Development. (1988). Infant and perinatal mortality rates by age and race: United States, each state and county: 1976-80; 1981-85. Vienna, VA: Information Research Institute.

Cannon, L. W., Higginbotham, E., & Leung, M. L. (1988). Race and class bias in qualitative research on women. Gender & Society, 2(4), 449-462.

Carlson, L. H., & Colburn, G. A. (Eds.). (1972). In their place: White America defines her minorities, 1850-1950. New York: John Wiley & Sons, Inc.

Carmichael, S., & Hamilton, C. (1967). Black Power: The politics of liberation in America. New York: Random House.

Cepicky, P., & Mandys, F. (1989). Reproductive outcome in women their husbands in the course of pregnancy. European Journal of Obstetrics & Gynecology and Reproductive Biology, 30, 137-140.

Chopoorian, T. J. (1986). Reconceptualizing the environment. In P. Moccia (Ed.), New approaches to theory development (pp.39-54). New York: National League for Nursing (Publishing No. 15-1992).

Clark, K. B., & Clark, M. K. (1947). Racial identification and preference in Negro children. In T. Newcoomb & E. Hartley (Eds.), Readings in social psychology. New York: Holt.

Coe, S. N. (1982). A study of identity patterns among three generations of black women. (University of California, Berkeley, Microfilms No. 6030 unit 370).

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Hillsdale, N.J.: Lawrence Erlbaum Associates.

Collins, J. W., & David, R. J. (1990). The differential effect of traditional risk factors on infant birthweight among blacks and whites in Chicago. American Journal of Public Health, 80(6), 679-681.

Cone, T. E. (1961). De pondere infantum recens natorum: The history of weighing the newborn infant. Pediatrics, 28, 490-498. (IOM-p38)

Conrad, P., & Kern, R. (1986). Racism and sexism in medical care. In P.Conrad & R. Kern (Eds.), The sociology of health and illness (2nd ed.), (pp. 267-71). New York: St. Martin's Press.

Cook, T. D., & Campbell, D. T. (1979). Validity (Chap. 2). In Quasi-experimentation: Design and analysis for field settings. Chicago: Rand McNally College Publishing Company.

Crandon, A. J. (1979a). Maternal anxiety and obstetric complications. Journal of Psychosomatic Research, 23, 109-111.

Crandon, A. J. (1979b). Maternal anxiety and neonatal wellbeing. Journal of Psychosomatic Research, 23, 113-115.

Creasy, R. K., Gummer, B. A., & Liggins, G. C. (1980). System for predicting spontaneous preterm births. Obstetrics and Gynecology, 55(6), 692-695.

David, R. J. (1986). Did low birthweight among US really increase? American Journal of Public Health, 76(4), 380-384.

Davids, A., & DeVault, S. (1962). Maternal anxiety during pregnancy and childbirth abnormalities. Psychosomatic Medicine, 24(5), 464-470.

Davidson, B. (1980). The African slave trade. Boston: Little, Brown & Co.

DeLongis, A., Coyne, J. C., Dakof, G. Folkman, S., & Lazarus, R. S. (1982). Relationship of daily hassles, uplifts, and major life events to health status. Health Psychology, 1(2), 119-136.

Department of Health Services, Health and Welfare Agency, State of California. (1986). Vital statistics of California, 1984.

Dowling, P. T., & Fisher, M. (1987). Maternal factors and low birthweight infants: A comparison of blacks with Mexican-Americans. Journal of Family Practice, 25(2), 153-158.

Essed, P. (1990). Everyday racism (C. Jaffe, Trans.). Claremont, Ca: Hunter House, Inc. (Original work published 1990)

Fanon, F. (1963). The wretched of the earth. New York: Grove Press. (Original work published 1961.)

Feagin, J. R. (1978). Racial and ethnic relations. New Jersey: Prentice-Hall, Inc.

Folkman, S., Lazarus, R. S., Gruen, R. J., & DeLongis, A. (1986). Appraisal, coping, health status and psychological symptoms. Journal of Personality and Social Psychology, 50(3), 571-755.

Franklin, J. H. (1974). From slavery to freedom: A history of Negro Americans (4th ed.). New York: Alfred A. Knopf.

Friede, A., Baldwin, W., Rhodes, P. H., Buehler, J. W., & Strauss, L. T. (1988). Older maternal age and infant mortality in the United States. Obstetrics & Gynecology, 72(2), 152-157.

Geronimus, A. T. (1986). The effects of race, residence and prenatal care on the relationship of maternal age to neonatal mortality. American Journal of Public Health, 76(2), 1416-1421.

Gould, J. B., Davey, B., & Leroy, S. (1989). Socioeconomic differentials and neonatal mortality: Racial comparison of California singletons. Pediatrics, 83(2), 181-186.

Gould, J. B., & Leroy, S. (1988). Socioeconomic status and low birth weight: A racial comparison. Pediatrics, 82(6), 896-904.

Green, N. (1990a). Stressful events related to childbearing in African-American women: A pilot study. Journal of Nurse-Midwifery, 35(4), 231-236.

Green, N. (1990b). The Perceptions of Racism Scale, Unpublished instrument, University of California, School of Nursing, San Francisco.

Hammersley, M., & Atkinson, P. (1983). Ethnography: Principles in practice. New York: Tavistock Publications.

Harris, L. (1984). The Harris Survey. May 10.

Head, B. (1974). A question of power. London: Heinemann Educational Books Ltd.

Hoff, C., Wertelecki, W., Reyes, E., Zansky, S., Dutt, J., Stumpe, A., Till, D., & Butler, R. (1985). Maternal sociomedical characteristics and birth weights of firstborns. Social Science Medicine, 21(7), 775-783.

Homer, C. J., James, S. A., & Siegel, E. (1990). Work-related psychosocial stress and risk of preterm, low birthweight delivery. American Journal of Public Health, 80(2), 173-177.

Housley, K., Martin, S., & McCoy, H. (1987). Self-esteem of adolescent females as related to race, economic status, and area of residence. Perceptual and Motor Skills, 64, 559-566.

Hraba, J., & Grant, G. (1970). Black is beautiful: A reexamination of racial preference and identification. Journal of Personality and Social Psychology, 16(3), 398-402.

Institute of Medicine, Committee to Study the Prevention of Low Birthweight. (1985). Preventing low birthweight. Washington, DC: National Academy Press.

Johnson, J. H. (1987). U. S. differentials in infant mortality: Why do they persist? Family Planning Perspectives, 19(5), 227-232.

Jordan, W. D. (1968). White over black: American attitudes toward the Negro, 1550-1812. Tennessee: Kingsfort Press.

Joyce, T. (1987). The demand for health inputs and their impact on the black neonatal mortality rate in the U.S. Social Science Medicine, 24(11), 911-918.

Joyce, T. (1990). The dramatic increase in the rate of low birthweight in New York City: An aggregate time-series analysis. American Journal of Public Health, 80(6), 682-684.

Kanner, A. D., Coyne, J. C., Schaefer, C., & Lazarus, R. S. (1981). Comparison of two modes of stress measurement: Daily hassles and uplifts versus major life events. Journal of Behavioral Medicine, 4(1), 1-39.

Kessel, S. S., Villar, J., Berendes, H. W., & Nugent, R. P. (1984). The changing pattern of low birth weight in the United States. American Medical Association Journal, 251(15), 1978-1982.

Kitagawa, E. M., & Hauser, P. M. (1973). Differential mortality in the United States: A study in socioeconomic epidemiology. Cambridge: Harvard University Press.

Klebanoff, M. A., & Yip, R. (1987). Influence of maternal birth weight on rate of fetal growth and duration of gestation. Journal of Pediatrics, 111(2), 287-292.

Kleinman, J. C., & Kessel, S. S. (1987). Racial differences in low birth weight. New England Journal of Medicine, 317(12), 749-753.

Kliegman, R. M., Rottman, C. J., & Behrman, R. E. (1990). Strategies for prevention of low birth weight. American Journal of Obstetrics and Gynecology, 162(4), 1073-1083.

Kovel, J. (1970). White racism: A psychohistory. New York: Random House.

Krieger, N. (1990). Racial and gender discrimination: Risk factors for high blood pressure? Social Science and Medicine, in press.

Kugler, J. P., Connell, F. A., & Henley, C. E. (1990). Lack of difference in neonatal mortality between blacks and whites served by the same medical care system. Journal of Family Practice, 30(3), 281-287.

Lazarus, R. S., & Folkman, S. (1984). Stress, appraisal and coping. New York: Springer Publishing Co.

Lazarus, R. S., & Folkman, S. (1989). Manual for the hassles and uplifts scales. Palo Alto, California: Consulting Psychologists Press.

Lederman, E., Lederman, R. P., Work, B. A., & McCann, D. S. (1981). Maternal psychological and physiologic correlates of fetal-newborn status. American Journal of Obstetrics and Gynecology, 139(8), 956-57.

McCord, C., & Freeman, H. P. (1990). Excess mortality in Harlem. New England Journal of Medicine, 322(3), 173-177.

McDonald, R. L., & Christakos, A. C. (1963). Relationship of emotional adjustment during pregnancy to obstetrics complications. American Journal of Obstetrics and Gynecology, 86(3), 341-348.

Main, D. M., Richardson, D., Gabbe, S. G., Strong, S., & Weller, S. C. (1987). Prospective evaluation of a risk scoring system for predicting preterm delivery in black inner city women. Obstetrics & Gynecology, 69(1), 61-66.

Mays, V. (1986). Identity development of black Americans: The role of history and the importance of ethnicity. American Journal of Psychotherapy, 40(4), 582-593.

Miller, H. C., & Jekel, J. F. (1987). The effect of race on the incidence of low birth weight: Persistence of effect after controlling for socioeconomic, educational, marital, and risk status. Yale Journal of Biology and Medicine, 60(3), 221-232.

Murray, J. L., & Bernfield, M. (1988). The differential effect of prenatal care on the incidence of low birth weight among blacks and whites in a prepaid health care plan. New England Journal of Medicine, 319(21). 1385-1391.

Navarro, V. (1990). Race or class versus race and class: mortality differentials in the United States. Lancet, 336, 1238-1240.

Neighbors, H. W. (1986). Socioeconomic status and psychologic distress in adult blacks. American Journal of Epidemiology, 124(5), 779-793.

Norbeck, J. S., & Tilden, V. P. (1983). Life stress, social support, and emotional disequilibrium in complications of pregnancy: A prospective, multivariate study. Journal of Health and Social Behavior, 24(3), 30-46.

Nuckolls, K. B., Cassel, J., & Kaplan, B. (1972). Psychosocial assets, life crisis and the prognosis of pregnancy. American Journal of Epidemiology, 96(5), 431-441.

Patterson, R. M., Prihoda, T. J., Gibbs, C. E., & Wood, R. C. (1986). Analysis of birth weight percentile as a predictor of perinatal outcome. Obstetrics and Gynecology, 68(4), 459-463.

Pete, J. M. (1990). Self-concept: younger vs older black pregnant adolescents. Journal of National Black Nurses Association, 4(1), 35-44.

Petitti, D. B., & Coleman, C. (1990). Cocaine and the risk of low birth weight. American Journal of Public Health, 80(1). 25-28.

Pinderhughes, C. A. (1973). Racism and psychotherapy. In C. V. Willie, B. M. Kramer, & B. S. Brown (Eds.), Racism and mental health. (pp. 61-121). Pennsylvania: University of Pittsburgh Press.

Pritchard, J. A., & MacDonald, P. C. (1980). Williams obstetrics (16th ed.). New York: Appleton-Century-Crofts.

Reeb, K. G., Graham, A. V., Zyzanski, S. J., & Kitson, G. C. (1987). Predicting low birthweight and complicated labor in urban black women: A biopsychosocial perspective. Social Science Medicine, 25(12), 1321-7.

Rodney, W. (1974). How Europe underdeveloped Africa. Washington, DC: Howard University Press.

Rooth, G. (1980). Low birthweight revised. Lancet, 1, 639-641. (IOM,p38)

Rosenberg, M. (1965). Society and the adolescent self-image. New Jersey: Princeton University Press.

Schatzman, L., & Strauss, A. L. (1973). Field research: Strategies for a natural sociology. Englewood Cliffs, N. J.: Prentice-Hall, Inc.

Schwethelm, B., Margolis, L. H., Miller, C., & Smith, S. (1989). Risk status and pregnancy outcome among medicaid recipients. American Journal of Preventative Medicine, 5(3), 157-163.

Shino, P., Klebanoff, M. A., Graubard, B. I., Berendes, H. W., & Rhoads, G. G. (1986). Birth weight among women of different ethnic groups. JAMA, 255(1), 48-52.

Showstack, J. A., Budetti, P. P., & Minkler, D. (1984). Factors associated with birthweight: An exploration of roles of prenatal care and length of gestation. American Journal of Public Health, 74(9), 1003-1008.

Sidel, R. (1987). Women and children last: The plight of poor women in affluent America. New York: Viking Penquin Inc.

Silber, E., & Tippett, J. (1965). Self-esteem: Clinical assessment and measurement validation. Psychological Reports, 17, 323-329.

Smith, L. M. (1980). Contributions to understanding self-image in Black Americans: Do Black Americans feel black is beautiful? (University of California, Berkeley, Microfilm 6030, Unit 177).

Stein, A., Campbell, E. A., Day, A., McPherson, K., & Cooper, P. J., (1987). Social adversity, low birth weight and preterm delivery. British Medical Journal, 295, 291-293.

Suthutvoravut S., Hogue, C. J., Guyer, B., Anderka, M., & Oberle, M. W. (1989). Are preterm black infants larger than preterm white infants, or are they more misclassified? Journal of Biosocial Science, 21(1), 443-451).

Taylor, R. J., Neighbors, H. W., & Broman, C. L. (1989). Evaluation by Black Americans of a social service encounter during a serious personal problem. Social Work, 34(3), 205-211.

United Nations. (1990). Demographic Yearbook, 1988. New York: United Nations Press.

U. S. Department of Commerce. (1980). Statistical abstract of the United States, 1980. Washington, DC: Bureau of Census.

U. S. Department of Commerce. (1987). Statistical abstract of the United States, 1987. Washington, DC: Bureau of Census.

U. S. Department of Health, Education and Human Services. (1986). Volume VI: Infant mortality and low birthweight.

U. S. Department of Health, Education and Welfare. (1978). Characteristics of births: United States, 1973-1975. Hyattsville: National Center for Health Statistics.

U. S. Department of Health, Education and Welfare. (1975). Selected vital and health statistics in poverty and nonpoverty areas of 19 large cities: United States, 1969-71. Maryland: National Center for Health Statistics.

Verloove-Vanhorick, A. P., Verwey, R. A., Brand, R., Gravenhorst, J. B, Keirse, M. J., & Ruys, J. H. (1986). Neonatal mortality risk in relation to gestational age and birthweight. Lancet, January 11, 55-57.

Vital Statistics of the U.S. (1982). Washington, DC: Bureau of Census.

Ward, S. H., & Braun, J. (1972). Self-esteem, and racial preference in black children. American Journal of Orthopsychiatry, 42(4), 644-647.

Wenneker, M. B., & Epstein, A. M. (1989). American Medical Association Journal, 261(2), 253-257.

Williams. R. L., Binkin, N. J., & Clingman, E. J. (1986). Pregnancy outcomes among Spanish-surname women in California. American Journal of Public Health, 76(4), 387-391.

Williamson, H. A., LeFevre, M., & Hector, M. (1989). Association between life stress and serious perinatal complications. The Journal of Family Practice, 29(5), 489-496.

Woods, N. F., & Catanzaro, M. (1988). Nursing research: Theory and practice. St. Louis: C. V. Mosby Company.

Yagman, M. W., Kraemer, H. C., Kindlon, D., Tyson, J. E., Casey, P., & Gross, R. T. (1989). Identification of intrauterine growth retardation among low birth weight preterm infants. Journal of Pediatrics, 155(5), 799-807.

Yankauer, A. (1990). What infant mortality tells us. American Journal of Public Health, 80(6), 653-654.

APPENDIX A

UCSF Committee on Human Research Approval

Stress, Self-Esteem and Racism as Factors Associated with Low Birth Weight and Preterm Delivery in African-American Childbearing Women

COMMITTEE ON HUMAN RESEARCH
OFFICE OF RESEARCH AFFAIRS, Box 0962
UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

TO: Dyanne D. Affonso, Ph.D., R.N. Box 0606
Nanny L. Bowe Box 0606

RE: Stress, Self-Esteem, and Racism as Factors Associated with Low Birth Weight and Preterm Delivery in African-American Childbearing Women

The Committee on Human Research, the UCSF Institutional Review Board holding Department of Health and Human Services Multiple Assurance #M-1169, has reviewed and approved this application to involve humans as research subjects.

APPROVAL NUMBER: H1778-05463-01. This number is a UCSF CHR number and should be used on all consent forms, correspondence and patient charts.

APPROVAL DATE: May 23, 1990. **Expedited Review**

EXPIRATION DATE: May 15, 1991. If the project is to continue, it must be renewed *by the expiration date.* See reverse side for details.

ADVERSE REACTIONS/COMPLICATIONS: All problems having to do with subject safety must be reported to the CHR within ten working days.

MODIFICATIONS: All protocol changes involving subjects must have prior CHR approval.

QUESTIONS: Please contact the office of the Committee on Human Research at (415) 476-1814 or campus mail stop, Box 0962.

Sincerely,

Rebecca Coleman

Rebecca L. Coleman, Pharm.D.
Chair
Committee on Human Research

HEPC Project # 90005463

APPENDIX B

The Permanente Medical Group Inc. Approval

The Permanente Medical Group, Inc.

280 WEST MacARTHUR BOULEVARD
OAKLAND, CALIFORNIA 94611-5693
(415) 596-1000

ANTIOCH
FAIRFIELD
FREMONT
FRESNO
GILROY
LIVERMORE
MARTINEZ
MODESTO
NAPA
OAKLAND
PLEASANTON
REDWOOD CITY
RICHMOND
ROSEVILLE
SACRAMENTO
SAN FRANCISCO
SAN JOSE
SAN RAFAEL
SANTA CLARA
SANTA ROSA
S. SACRAMENTO
S. SAN FRANCISCO
STOCKTON
SUNNYVALE
VALLEJO
WALNUT CREEK

ROBERT S. KLEIN, M.D.
Physician-in-Chief

PANSY KWONG, M.D.
Assistant Physician-in-Chief

PRESTON MARING, M.D.
Assistant Physician-in-Chief

THOMAS DeMARTINO
Administrator

4/2/00

Rebecca Coleman, PharmD
Chairperson, Committee on Human Research
Office of Research Affairs
University of California, San Francisco
3333 California Street, Suite 11
San Francisco, California 94118

RE Stress, Self-Esteem and Racism as Factors Associated With Low Birth Weight and Preterm Delivery in the African-American Childbearing Woman A Research Proposal

Dear Dr. Coleman.

We have reviewed the proposed project by Ms. Nanny Bowe regarding the effects of stress, self-esteem, and racism on the birth weight of infants. It is a worthwhile project to pursue.

We have granted Ms. Bowe permission to use our facilities for her project Should you have any questions, please feel free to call or write.

Sincerely yours,

Victor P. Chin. MD. FACOG
Chief, Dept. of OB-GYN
Director. OB-GYN Residency
Progam

KAISER PERMANENTE

APPENDIX C

UCSF Consent Form for Research Subject

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
CONSENT FORM FOR RESEARCH SUBJECT

A. PURPOSE AND BACKGROUND

Dr. Dyanne Affonso and Ms. Nanny Bowe from the Department of Family Health Care Nursing are conducting a study to learn about factors related to low birth weight and preterm delivery in black women. Because I am a black woman, I have been asked to participate in this survey.

B. PROCEDURES

If I agree to be in this survey, I will be asked to complete the question booklet which will take about 20 minutes. The booklet consists of four parts. Part one asks questions related to my education, employment and pregnancy. Part two is a self-esteem scale and has ten items. Part three asks about perceptions of racism and health care and has twenty statements. The last part is the Hassles Scale and has 117 items. If I agree to be in this study, my medical records will be reviewed.

C. RISKS/DISCOMFORTS

1. Some of the questions may make me feel uncomfortable in which case I am free not to answer them or stop the study at any time.
2. Confidentiality: Study records will be kept as confidential as possible. No individual identities will be used in any reports or publications resulting from the study. Study information will be coded and kept in locked files at all times. Only survey personnel will have access to the files. After the study has been completed all recorded data will be destroyed.

D. BENEFITS

There will be no direct benefits to me from participating in this survey. An anticipated benefit may be a better understanding of factors related to low birth weight and preterm delivery.

E. ALTERNATIVES

I am free to choose not to participate in this survey.

F. COSTS

There will be no costs to me as a result of taking part in this survey.

G. REIMBURSEMENT

There will be no payment to me for taking part in this survey.

H. QUESTIONS

Ms. Bowe or her assistant, Ms. Yearwood has talked to me about the survey and has answered all questions. If I have further questions I may call them at (415) 476-4668 or Dr. Dyanne Affonso at (415) 476-1732. If I wish to speak with someone else, I may contact the Committee on Human Research which is concerned with the protection of volunteers in research projects. I may reach the Committee

office between 8AM and 5PM, Monday to Friday, by calling (415) 476-1814 or by writing to the Committee on Human Research, Suite 11, Laurel Heights Campus, Box 0616, University of California, San Francisco, CA 94143.

I. CONSENT

I have been given a copy of this consent form to keep.

PARTICIPATION IN RESEARCH IS VOLUNTARY. I have the right to decline to participate at any point. My decision as to whether or not participate in this study will have no influence on my present or future status as a patient at Kaiser Hospital.

_____ _____

Date Signature

_____

Person Obtaining Consent

APPENDIX D

Kaiser Permanente Prenatal Record

KAISER PERMANENTE

PRENATAL RECORD

ADDRESS | CITY | ZIP

AGE | BIRTHDAY | HOME PHONE | MARITAL STATUS ☐ M ☐ S ☐ Sep ☐ D ☐ W | IMPRINT AREA

PATIENT'S OCCUPATION | PLACE OF BUSINESS, CITY | WORK PHONE | RELIGION | 1ST LANGUAGE | RACE

NAME (FATHER OF BABY) | OCCUPATION (FOB) | WORK PHONE (FOB) | HEALTH HISTORY (FOB) | RACE (FOB)

PAST MEDICAL HISTORY	NO	YES	COMMENT
Drug Allergies			
Diabetes			
Hypertension			
Heart Disease			
Liver Disease / Hepatitis			
Resp Disease TB / Asthma			
Kidney Disease / Mult UTI's			
Neuro Disease / Seizures			
Musculo-Skeletal			
Anemia			
Transfusions			
Bleeding Tendency			
Thyroid			
Emotional Illness			
Venereal Disease			
Herpes (Patient)			
Herpes (FOB)			
Abnormal Pap			
DES Exposure			
Infertility			
Surgeries / Hosp.			

FAMILY HISTORY	NO	YES	COMMENT
Diabetes			
Hypertension			
Heart Disease			
Kidney Disease			
Cancer			
TB			
Seizures			
Twins			
Congenital Anomalies			

SOCIAL HISTORY	NO	YES	COMMENT
Drugs			
Alcohol			
Tobacco			

MEDS TAKEN SINCE PREGNANT

DIET ☐ Regular ☐ Special _____

LAST CONTRACEPTIVE METHOD USED | DATE DISCONTINUED

POSITIVE PREGNANCY TEST ☐ Urine, date ____ ☐ Serum, date ____

G	P	SAB	TAB	LIVING	MENSES
					X

LMP | NORMAL? | REGULAR? | EDC

PREVIOUS PREGNANCIES

YEAR	WHERE	WKS	HRS LABOR	ANES.	DELIVERY	SEX	WT.	COMPLICATIONS

POSTPARTUM CONTRACEPTION

BCP ☐ IUD ☐ Diaphragm ☐ Condom/Foam ☐ TL ☐ Other

OB NURSE SIGNATURE

PHYSICAL EXAM DATE

GENERAL HT PRE-PREG WEIGHT

	WNL		WNL
SKIN		EXT	
HEENT		VAG	
NECK		CX	
BREASTS		UTERUS	
LUNGS		ADN	
HEART		RECT	
ABD		PELVIS ☐ Adequate ☐ Borderline ☐ Inadequate	
EXT		DIAG CONJ SPINES INTERSPINOUS DIAG	
NEURO		ARCH BI-ISCHIAL SACRUM	
IMPRESSION		EDC: BY DATES BY SIZE	
		SIGNATURE M.D.	

DISPOSITION ☐ Reg ☐ M D ☐ Special

DEFINITION OF WNL (OR ✓)

Skin	No rash or lesions
HEENT	Normocephalic, atraumatic Pupils equal, round and reactive to light Extraocular movements intact Hearing is normal Nose without drainage Throat not injected
Neck	Supple without thyromegaly or masses
Breasts	No masses, skin or nipple changes
Lungs	Clear to auscultation
Heart	Regular rhythm. No murmurs or extra sounds Rate between 60–100/min
Abdomen	Soft without hepatosplenomegaly, tenderness or masses
Pelvic	Ext: Normal genitalia. No vulvar lesions, cysts or masses Vagina: No abnormal discharge, lesions, cysts or masses Cervix: No lesions, nontender Uterus: Normal size, shape, contour. Mobile, nontender Adnexa: No masses or tenderness Rectal: No masses. Normal sphincter tone
Extremities	No clubbing, cyanosis or edema
Neurologic	Normoreflexive and normal muscle tone

	TYPE	RH	GENO-TYPE	Hgb E	MCV
PATIENT					
FOB					

RHOGAM CANDIDATE

☐ YES

☐ NO

I have been informed that my blood type is: _____ and Rh _____.

PATIENT SIGNATURE DATE WITNESS

LAB / DATE			
Hgb			
MCV			
Ab Screen			
RPR			

WEEK	TEST	Date Issued; Initials	RESULT	Date Info Given; Initials
1ST VISIT	PAP			
	SEROLOGY			
	RUBELLA			
	HEPATITIS			
	URINE C & S			
	TINE			
	Outside Records Req.			
15 - 20	AFP			
	AMNIO			
19 - 22	Hgb			
	Rh Titer			
22 - 25	Rhogam Pack			
26 - 28	1° Glucola			
	VDRL			
33 - 35	Hgb, Rh Titer			
	PREADMIT			
	Outside Records Rec'd			
34 + 36	HERPES			
	HERPES			

DATING

	DATE	WKS.	EDC
LMP			
1ST Exam			
Quickening			
1st Fetoscope			
Uterus at U			
US #1			
US #2			
BEST EDC			

EDC

DATE	WT	BP	URINE S	URINE P	URINE K	Fetal Heart	POS	MCD	Gest. Wks.	Return Wks.	✓ See Pink	Signature	COMMENTS

PATIENT SIGNATURE DATE WITNESS SIGNATURE DATE

TL Permit Signed
☐ YES ☐ NO

PROBLEM LIST

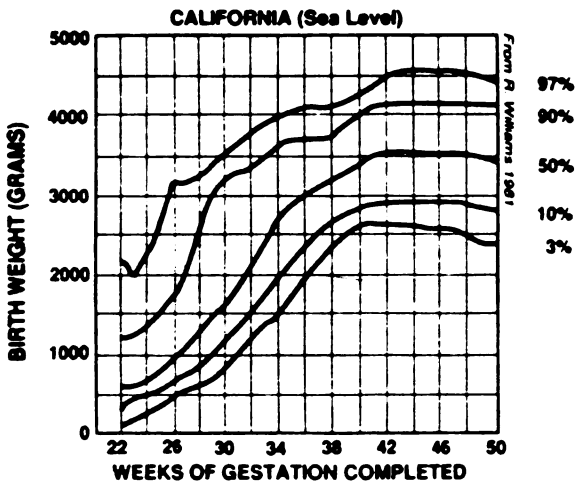
A.C. = 1.57 (D_1 + D_2)

Fetal Abdominal Circumference Measurements (cm)*

Weeks of gestation	Percentile 5	25	50	75	95
18	10.3	11.9	13.1	14.2	15.9
19	11.6	13.3	14.4	15.6	17.2
20	12.6	14.3	15.4	16.6	18.2
21	14.2	15.9	17.0	18.1	19.8
22	15.2	16.9	18.0	19.1	20.8
23	16.5	18.2	19.3	20.4	22.1
24	17.7	19.4	20.5	21.6	23.3
25	18.5	20.2	21.3	22.4	24.1
26	19.3	21.0	22.1	23.2	24.9
27	20.9	22.6	23.7	24.8	26.5
28	22.5	24.2	25.3	26.4	28.1
29	24.1	25.8	26.9	28.0	29.7
30	24.6	26.3	27.4	28.5	30.2
31	25.2	26.9	28.0	29.1	30.8
32	25.9	27.6	28.7	29.8	31.5
33	26.2	27.9	29.0	30.1	31.8
34	27.3	29.0	30.1	31.2	32.9
35	29.4	31.1	32.2	33.3	35.0
36	30.5	32.2	33.3	34.4	36.1
37	31.6	33.3	34.4	35.5	37.2
38	32.9	34.9	35.7	36.8	38.5
39	33.1	34.8	35.9	37.0	38.7
40	33.3	35.0	26.1	37.2	38.9
41	34.3	36.0	37.1	38.2	39.9

* Circumference measurements are obtained from the outer aspect of the fetal abdomen at the area of the liver that shows the ductus venosus.

From Sabbagha, *Diagnostic Ultrasound Applied to Obstetrics and Gynecology* p. 99



FETAL MEASUREMENTS FROM ACUSON SOFTWARE

MA (wks)	BPD (mm)	FL (mm)	HC (mm)	AC (mm)
12.0	16	7	56	51
12.5	17	8	64	57
13.0	19	10	73	63
13.5	22	12	81	69
14.0	24	14	89	75
14.5	26	15	97	81
15.0	28	17	105	88
15.5	30	19	113	94
16.0	32	20	120	100
16.5	34	22	128	106
17.0	36	23	135	112
17.5	38	25	142	118
18.0	40	26	149	124
18.5	41	28	156	130
19.0	43	29	162	135
19.5	45	31	168	141
20.0	46	32	175	147
20.5	48	33	181	153
21.0	50	35	187	159
21.5	51	36	193	165
22.0	53	38	198	170
22.5	54	39	204	176
23.0	56	40	209	182
23.5	57	42	214	187
24.0	59	43	220	193
24.5	60	44	225	198
25.0	62	45	230	204
25.5	63	47	235	209
26.0	64	48	240	215
26.5	66	49	244	221
27.0	67	50	249	226
27.5	68	52	253	231
28.0	70	53	258	237
28.5	71	54	262	242
29.0	72	55	266	248
29.5	74	56	271	253
30.0	75	57	275	258
30.5	76	59	279	264
31.0	78	60	283	269
31.5	79	61	287	274
32.0	79	62	290	279
32.5	81	63	294	285
33.0	82	64	298	290
33.5	83	65	302	295
34.0	84	66	305	300
34.5	86	67	309	305
35.0	87	68	313	311
35.5	88	69	316	316
36.0	89	70	319	321
36.5	89	71	323	326
37.0	91	72	326	331
37.5	92	73	329	336
38.0	93	74	333	341
38.5	94	75	336	346
39.0	95	76	339	351
39.5	97	77	342	356
40.0	98	78	346	361

NOTE: This chart is a sampling of measurements from "Hadlock FP, et al. "Estimating Fetal Age: Computer Assisted Analysis of Multiple Growth Parameters" Radiology Vol 152, No. 2. Whenever values have fallen in between categories, the values have been rounded up to the next value.

EXAM	DATE	WKS. BY LMP	FETAL NO.	PRESENTATION	DATING BPD	WKS.	FEMUR	WKS.	FETAL GROWTH AC	WKS.	Ultra Gestat. Age	Est. Fetal Weight	PLACENTA LOCATION	GRADE	AFV
1															
2															
3															
4															
5															

APPENDIX E

Low Birth Weight and Preterm Delivery Study

Code Number

Date

A STUDY OF

RELATIONSHIPS WITH LOW BIRTH WEIGHT

AND PRETERM DELIVERY

NANNY L. BOWE, RN, CNM, MHS

DYANNE D. AFFONSO, RN, PhD

UCSF

University of California, San Francisco

Department of Family Health Care Nursing

N411Y, School of Nursing

San Francisco, California

(415) 476 - 4668

WE THANK YOU IN ADVANCE FOR PARTICIPATING IN OUR STUDY

Please answer questions 1 through 7:

1. Write your age in years._____

2. What was the highest grade of school you completed? (circle one)

Grade School												High School				College				Grad School						
1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4		1	2	3	4	5	6	7

3. Have you had any other special training? For example:
   ___1. Beauty College
   ___2. Business School
   ___3. Other_____

4. What is your total monthly family income? (Choose one and mark an X").
   ___1. $500 or less
   ___2. $501 to $1000
   ___3. $1001 to $1,500
   ___4. $1,501 to $2,000
   ___5. $2,001 to $2,500
   ___6. $2,501 to $3,000
   ___7. $3,000 to $3,500
   ___8. $3,501 to $4,000
   ___9. Over $4,000

5. Employment status: (Choose one and mark an "X").
   ___1. Employed, full-time
   ___2. Employed, part-time
   ___3. Unemployed
   ___4. Student
   ___5. AFDC
   ___6. Disability
   ___7. Own business

6. What is your marital status? (Choose one and mark an "X")
   ___1. never married
   ___2. married
   ___3. widowed
   ___4. separated or divorced
   ___5. other (please describe)_____

7. How many people live in your household?_____

8. EDC_____
9. Weeks gestation (today)_____ Gravida_____ Ab_____
10. Weeks gestation at 1st prenatal visit_____
11. Medical and/or obstetrical complications_____

SELF-ESTEEM SCALE

On this page there are 10 statements. Put an "X" next to the word that best tells how you feel about the statement. Do this for each statement.

1. I feel that I'm a person of worth, at least on an equal basis with others.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

2. I feel that I have a number of good qualities.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

3. All in all, I am inclined to feel that I am a failure.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

4. I am able to do things as well as most other people.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

5. I feel I do not have much to be proud of.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

6. I take a positive attitude toward myself.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

7. On the whole, I am satisfied with myself.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

8. I wish I could have more respect for myself.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

9. I certainly feel useless at times.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

10. At times I think I am no good at all.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

PERCEPTIONS SCALE

On the next two pages you will find 20 statements.

1. Read each statement carefully
2. Choose the word that best tells how you feel about the statement.
3. Put an "X" in the space following the word.
4. Do this for each statement.

1. Black women experience negative attitudes when they go to a white doctor's office.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

2. Doctors treat black women and white women the same.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

3. Racism is a problem in my life.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

4. A pregnant white woman is treated with more respect than a pregnant black woman.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

5. I am not affected by discrimination.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

6. Sometimes if you are black in a white doctor's office, it's as if you don't belong there.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

7. Racial discrimination in a doctor's office is common.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

8. In most hospitals, black women and white women get the same kind of care.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

9. Doctors and nurses act the same way to white and black pregnant women.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

10. If a black pregnant woman comes to a doctor's office, it's assumed that she is on welfare.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

11. Blacks have the same opportunities as whites to live a middle class life.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

12. Officials listen more to whites than blacks.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

13. If a black woman and a white woman are applying for the same job they have the same chance of being hired.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

14. There has been significant progress in ending racism in the 1980's.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

15. A white woman has more educational opportunities than a black woman.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

16. Black women get pregnant to receive more welfare benefits.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

17. Black women can receive the care they want as equally as white women.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

18. Judges are harder on blacks than whites.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

19. Black pregnant women have fewer options for health care.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

20. Officials listen more to blacks than whites.

Strongly agree____ Agree____ Disagree____ Strongly disagree____

The Daily Hassles Scale

Name:_____ Sex:_____

Identification Number (optional):_____ Date:_____

Directions:

Hassles are irritants that can range from minor annoyances to fairly major pressures, problems, or difficulties. They can occur few or many times in any given time period. Listed below are a number of ways in which a person can feel hassled.

When you respond to the items, you must have a specific time period in mind. Please indicate the time period you will be thinking about:

- ❑ Past month
- ❑ Past week
- ❑ Yesterday
- ❑ Today
- ❑ Other:_____

Read each item and circle 0 if the item was no hassle for you in the time period shown above. If it was a hassle, indicate how severe the hassle was by circling 1, 2, or 3.

How much of a hassle was this for you? **Severity**

		None or Did Not Occur	Somewhat Severe	Moderately Severe	Extremely Severe
1.	Misplacing or losing things	0	1	2	3
2.	Troublesome neighbors	0	1	2	3
3.	Social obligations	0	1	2	3
4.	Inconsiderate smokers	0	1	2	3
5.	Troubling thoughts about your future	0	1	2	3
6.	Thoughts about death	0	1	2	3
7.	Health of a family member	0	1	2	3
8.	Not enough money for clothing	0	1	2	3
9.	Not enough money for housing	0	1	2	3
10.	Concerns about owing money	0	1	2	3
11.	Concerns about getting credit	0	1	2	3
12.	Concerns about money for emergencies	0	1	2	3
13.	Someone owes you money	0	1	2	3
14.	Financial responsibility for someone who doesn't live with you	0	1	2	3
15.	Cutting down on electricity, water, etc.	0	1	2	3
16.	Smoking too much	0	1	2	3
17.	Use of alcohol	0	1	2	3
18.	Personal use of drugs	0	1	2	3
19.	Too many responsibilities	0	1	2	3
20.	Decisions about having children	0	1	2	3
21.	Nonfamily members living in your house	0	1	2	3
22.	Care for pet	0	1	2	3
23.	Planning meals	0	1	2	3
24.	Concerned about the meaning of life	0	1	2	3
25.	Trouble relaxing	0	1	2	3
26.	Trouble making decisions	0	1	2	3
27.	Problems getting along with fellow workers	0	1	2	3
28.	Customers or clients give you a hard time	0	1	2	3
29.	Home maintenance (inside)	0	1	2	3
30.	Concerns about job security	0	1	2	3
31.	Concerns about retirement	0	1	2	3
32.	Laid-off or out of work	0	1	2	3
33.	Don't like current work duties	0	1	2	3
34.	Don't like fellow workers	0	1	2	3
35.	Not enough money for basic necessities	0	1	2	3
36.	Not enough money for food	0	1	2	3
37.	Too many interruptions	0	1	2	3
38.	Unexpected company	0	1	2	3
39.	Too much time on hands	0	1	2	3
40.	Having to wait	0	1	2	3
41.	Concerns about accidents	0	1	2	3
42.	Being lonely	0	1	2	3
43.	Not enough money for health care	0	1	2	3
44.	Fear of confrontation	0	1	2	3
45.	Financial security	0	1	2	3

How much of a hassle was this for you?		Severity		
	None or Did Not Occur	*Somewhat Severe*	*Moderately Severe*	*Extremely Severe*
46. Silly practical mistakes	0	1	2	3
47. Inability to express yourself	0	1	2	3
48. Physical illness	0	1	2	3
49. Side effects of medication	0	1	2	3
50. Concerns about medical treatment	0	1	2	3
51. Physical appearance	0	1	2	3
52. Fear of rejection	0	1	2	3
53. Difficulties with getting pregnant	0	1	2	3
54. Sexual problems that result from physical problems	0	1	2	3
55. Sexual problems other than those resulting from physical problems	0	1	2	3
56. Concerns about health in general	0	1	2	3
57. Not seeing enough people	0	1	2	3
58. Friends or relatives too far away	0	1	2	3
59. Preparing meals	0	1	2	3
60. Wasting time	0	1	2	3
61. Auto maintenance	0	1	2	3
62. Filling out forms	0	1	2	3
63. Neighborhood deterioration	0	1	2	3
64. Financing children's education	0	1	2	3
65. Problems with employees	0	1	2	3
66. Problems on job due to being a woman or man	0	1	2	3
67. Declining physical abilities	0	1	2	3
68. Being exploited	0	1	2	3
69. Concerns about bodily functions	0	1	2	3
70. Rising prices of common goods	0	1	2	3
71. Not getting enough rest	0	1	2	3
72. Not getting enough sleep	0	1	2	3
73. Problems with aging parents	0	1	2	3
74. Problems with your children	0	1	2	3
75. Problems with persons younger than yourself	0	1	2	3
76. Problems with your lover	0	1	2	3
77. Difficulties seeing or hearing	0	1	2	3
78. Overloaded with family responsibilities	0	1	2	3
79. Too many things to do	0	1	2	3
80. Unchallenging work	0	1	2	3
81. Concerns about meeting high standards	0	1	2	3
82. Financial dealings with friends or acquaintances	0	1	2	3
83. Job dissatisfactions	0	1	2	3
84. Worries about decisions to change jobs	0	1	2	3
85. Trouble with reading, writing, or spelling abilities	0	1	2	3
86. Too many meetings	0	1	2	3
87. Problems with divorce or separation	0	1	2	3
88. Trouble with arithmetic skills	0	1	2	3
89. Gossip	0	1	2	3
90. Legal problems	0	1	2	3

How much of a hassle was this for you?		Severity		
	None or Did Not Occur	*Somewhat Severe*	*Moderately Severe*	*Extremely Severe*
91. Concerns about weight	0	1	2	3
92. Not enough time to do the things you need to do	0	1	2	3
93. Television	0	1	2	3
94. Not enough personal energy	0	1	2	3
95. Concerns about inner conflicts	0	1	2	3
96. Feel conflicted over what to do	0	1	2	3
97. Regrets over past decisions	0	1	2	3
98. Menstrual (period) problems	0	1	2	3
99. The weather	0	1	2	3
100. Nightmares	0	1	2	3
101. Concerns about getting ahead	0	1	2	3
102. Hassles from boss or supervisor	0	1	2	3
103. Difficulties with friends	0	1	2	3
104. Not enough time for family	0	1	2	3
105. Transportation problems	0	1	2	3
106. Not enough money for transportation	0	1	2	3
107. Not enough money for entertainment and recreation	0	1	2	3
108. Shopping	0	1	2	3
109. Prejudice and discrimination from others	0	1	2	3
110. Property, investments, or taxes	0	1	2	3
111. Not enough time for entertainment and recreation	0	1	2	3
112. Yardwork or outside home maintenance	0	1	2	3
113. Concerns about news events	0	1	2	3
114. Noise	0	1	2	3
115. Crime	0	1	2	3
116. Traffic	0	1	2	3
117. Pollution	0	1	2	3

THANK YOU AGAIN FOR PARTICIPATING

IN THIS STUDY

APPENDIX F

Recording of Birth Data

NAME	EDC	DELIVERY DATE	CODE	MEDICAL #	WKS GEST	BIRTH WEIGHT	APGAR	MEC.	OTHER

APPENDIX G

UCSF Committee on Human Research Approval

Perceptions of Racism Scale

COMMITTEE ON HUMAN RESEARCH
OFFICE OF RESEARCH AFFAIRS, Box 0616
UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

TO: Dyanne D. Affonso, Ph.D., R.N.
Box 0606

Nanny L. Bowe
Box 0606

RE: Survey: Perceptions of Racism

The UCSF Committee on Human Research (an Institutional Review Board holding Department of Health and Human Services assurance #M-1169) has approved the above request to involve humans as research subjects, with the following

COMMENT: Letters will be needed from each site to be used before recruitment begins at that site.

APPROVAL NUMBER: H1778-05121-01. This number is a UCSF CHR number which should be used on all consent forms, correspondence and patient charts.

APPROVAL DATE: January 10, 1990. Expedited Review

EXPIRATION DATE: January 1, 1991. If the project is to continue, it must be renewed *by the expiration date.* See reverse side for details.

ADVERSE REACTIONS/COMPLICATIONS: All problems having to do with subject safety must be reported to the CHR within ten working days.

MODIFICATIONS: All protocol changes involving subjects must have prior CHR approval.

LEGAL NOTICE: The University will defend and indemnify a principal investigator in legal actions arising from research activities involving humans only if the activities had current CHR approval.

QUESTIONS: Please contact the office of the Committee on Human Research at (415) 476-1814 or campus mail stop, Box 0616.

Good luck on your project.

Sincerely,

Reese T. Jones, M.D.
Chairman
Committee on Human Research

HEPC Project # 89005121

APPENDIX H

UCSF Information Sheet for Perceptions of Racism Scale

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
INFORMATION SHEET FOR RESEARCH SUBJECT

A. PURPOSE AND BACKGROUND

Dr. Dyanne Affonso and Ms. Nanny Bowe from the Department of Family Health Care Nursing are conducting a survey to learn about perceptions of racism by black women. Because I am a black woman, I have been asked to participate in this survey.

B. PROCEDURES

If I agree to be in this survey, I will be asked to complete the survey form which will take about 15 minutes. The form consists of twenty statements. The statements will be focused on my opinion about aspects of health care and race.

C. RISKS/DISCOMFORTS

1. Some of the questions may make me feel uncomfortable in which case I am free not to answer them or stop the survey at any time.
2. Confidentiality: Survey records will be kept as confidential as possible. No names will be collected prior to or during the survey. No individual identities will be used in any reports or publications resulting from the survey. The information will be coded and kept in locked files at all times. Only survey personnel will have access to the files. After the survey has been completed all recorded data will be destroyed.

D. BENEFITS

There will be no direct benefits to me from participating in this survey.

E. ALTERNATIVES

I am free to choose not to participate in this survey.

F. COSTS

There will be no costs to me as a result of taking part in this survey.

G. REQUIREMENTS

There will be no payment to me for taking part in this survey.

H. QUESTIONS

Ms. Bowe has talked to me about the survey and has answered all questions. If I have further questions I may call her at (415)476-4668. If I wish to speak with someone else, I may contact the Committee on Human Research which is concerned with the protection of volunteers in research projects. I may reach the Committee office between 8AM and 5PM, Monday to Friday, by calling (415) 476-1814 or by writing to the Committee on Human Research, Suite 11, Laurel Heights Campus, Box 0616,University of California, San Francisco, CA 94143.

I. INFORMATION

I have been given a copy of this information sheet to keep.

By filling out the survey form I am giving consent to be included in the study.

PARTICIPATION IN RESEARCH IS VOLUNTARY. I HAVE THE RIGHT TO DECLINE TO PARTICIPATE AT ANY POINT.

1/8/90