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Adolescent Childbearing: Geographic and Demographic  
Disparities in Palm Beach County

Beverly Ann David

ADOLESCENT CHILDBEARING: GEOGRAPHIC AND DEMOGRAPHIC  
DISPARITIES IN PALM BEACH COUNTY

Dissertation

Presented in Partial Fulfillment of the Requirements for the Degree of  
Doctor of Philosophy in Nursing

Barry University

by

Beverly Ann David, M.S.N., A.R.N.P.

\* \* \* \* \*

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Beverly Ann David

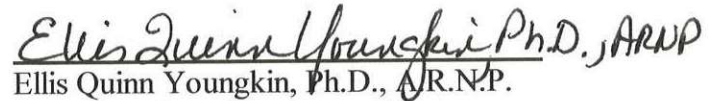
2001

This dissertation was prepared under the direction of the candidate's dissertation advisor, Dr. Sandra Engebretsen, School of Nursing, and has been approved by the members of her supervisory committee. It was submitted to the faculty of the School of Nursing and accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Nursing.


APPROVED BY:



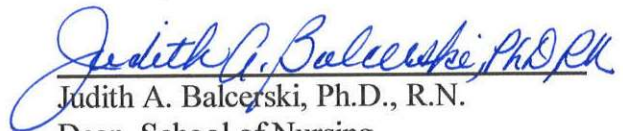
Sandra L. Engebretsen, Ph.D., R.N.  
Chairperson, Dissertation Committee



Ellis Quinn Youngkin, Ph.D., A.R.N.P.  
Member, Dissertation Committee



Susan Folden, Ph.D., A.R.N.P.  
Member, Dissertation Committee



Judith A. Balcerski, Ph.D., R.N.  
Dean, School of Nursing



## ABSTRACT

Palm Beach County's impoverished, pregnant, minority adolescents demonstrate extremely high childbearing rates. As a function of their geographic and demographic characteristics these vulnerable adolescents experience differential health trajectories (Cornerstone, 2001a). The purpose of this quantitative, correlational investigation was to predict what distinguished infant birth weight and childbearing adolescents in high and low birth rate zip code areas in Palm Beach County, Florida for the year 1999. Predictive discriminant analysis was used to test the ability and strength of the predictor variables: maternal age, education, race/ethnicity, prenatal care, and tobacco use in their contribution to classification in the criterion variables of high and low infant birth weight and childbearing adolescents in high and low birth rate zip code areas. The results of this investigation demonstrated that childbearing youth within Palm Beach County's high birth rate zip code areas were more likely to live in disadvantaged environments, be Black, Mexican, Central or South American Hispanic, have fewer prenatal visits, less years of education and have their infant be of less than average birth weight. A discussion of culturally competent nursing health care delivery options for at-risk populations and recommendations for nursing policy, practice and research are provided.

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## Chapter 1

### The Problem

In early 2000, county leaders and representatives from the Palm Beach County Health Department collaborated with Cornerstone Consulting Group and instituted an investigation to explore the context of teenage pregnancy and childbearing (Cornerstone, 2001a). Researchers identified geographically specific discrepancies in the rate and distribution of teen births within the county. The overall Palm Beach County birth rate (49 per 1000 women ages 15 to 19) was found to be slightly lower than the national (49.6 per 1000 women ages 15 to 19) and State of Florida birth rates (55 per 1000 women ages 15 to 19) (Cornerstone, 2001a; National Campaign to Prevent Teen Pregnancy, 2000; Ventura, Martin, Curtin, Menacker & Hamilton, 2001). However, a disproportionate rate of teen childbearing was found in certain hot spot areas of Palm Beach County, Florida.

These geographic hot spot areas are socially and economically vulnerable communities, with large minority populations, unlike their more advantaged neighbors in the remainder of Palm Beach County (Cornerstone, 2001a; Health and Human Services Planning Association, 1998). For example, over the past thirty years, the per capita income of Whites in Palm Beach County grew 32 % while the income of Hispanics grew 17 % and the per capita income of Blacks grew only 10 %. Approximately 15.1 % of Palm Beach County children ages 17

years and under live below the poverty line (\$16,000 for a family of four in 1998) and the poverty rate for Black children is quadruple that of White children (Harper & Vandivere, 1999). Of all children in Palm Beach County schools, 41.8% receive reduced cost or free lunches which is utilized as a proxy for income (Cornerstone, 2001a).

Unemployment rates for Hispanics and Blacks are two to three times the unemployment rate of Whites in Palm Beach County (Health and Human Services Planning Association, 1998). Within these disadvantaged environments teens bear children 200 to 300 % over the average county rate (Florida Department of Health, 1999a). The anticipated rapid growth of the youth population in these distressed areas fuels concern for our future generation, and necessitates examination of vulnerability indicators that undergird this disaggregate data.

Examination of positive and negative health predictors in relation to the social factors in disadvantaged environments, facilitates nurses' understanding of the motivational dynamics that underpin health behaviors. Increasing healthy behaviors and minimizing risky or health-damaging behaviors are critical to nurses attempts to foster health promoting and health protecting choices in our youth (Pender, 1996). Promoting and supporting healthy lifestyle behaviors in our future generation creates health-enhancing environments and healthy behavior choices for all members of our community. Furthermore, nurses ability to integrate multiple and diverse patient realities into an expansive holistic approach to health is essential to development of nursing as a discipline.



### Focusing the Lens

In American society, the size and composition of the adolescent population is undergoing dramatic changes. The ever-increasing number of teenagers, especially between the ages of 15 and 19, will further increase the number of adolescent pregnancies and births unless, somehow, the total number of births and pregnancies can be reduced.

Specifically, in the United States:

Between 1950 and 1980, the number of females ages 15 to 19 almost doubled, increasing from 5.3 million to 10.4 million. The population of teenage males (ages 15 to 19) literally doubled, increasing from 5.3 million to 10.7 million in 1980. Although their number declined in the 1980's, the population of adolescents has recently begun to increase. Between 1990 and 2010, the number of females, aged 15 to 19 will increase by 2.2 million. If current fertility rates remain the same, we will see a 26 percent increase in the number of pregnancies and births among teenagers (McElroy & Moore, 1997, p. 27; National Campaign to Prevent Teen Pregnancy, 1997, p. 8).

Adolescent pregnancy is one of the most significant outcomes sexually active teenagers experience through engagement in a spectrum of risk-taking behaviors. Some of these risk-taking behaviors include alcohol and illegal drug abuse, premature and unprotected sexual activity, criminal activity, delinquency,

suicide attempts and truancy (Cornerstone, 2001a; Kushman, Sieber, & Heariold-Kinney, 2000). Teenage pregnancy is associated with these risky adolescent behaviors and creates heavy burdens for the pregnant teenager, her parents, her children, and every member of society.

Adolescence has been viewed not only as the boundary between childhood and adulthood, but, also, the process by which the transition from one stage to the other is achieved. From a physiological standpoint the changes brought on by puberty, particularly menarche for young girls, are considered the starting point of adolescence (Schofield, 1994). Although the usual age range of menarche is 12 to 18 years of age, for the purpose of this discussion, adolescents are defined as children between 15 and 19 years of age.

The rationale underpinning the age criteria is twofold. Most of the births to teenagers are concentrated in later adolescence. More specifically, pregnancy and birth rates for 18 and 19 years old are more than double those for 15 to 17 years old (Coley & Chase-Lansdale, 1998). In addition pregnancy and birth rates for individuals under 15 years of age are too low and inconsistently reported to provide detailed or meaningful statistics (US DHHS, 2000).

The purpose of this investigation was to further explore the relationship between adolescent social, cultural and behavioral indicators and geographically disparate rates of adolescent (15 to 19 years of age) births identified in Palm Beach County, Florida for the year ending 1999 (Cornerstone, 2001a). Through more in-depth analysis of primary data (Florida Department of Health, 1999a) the intent of

this investigation was to predict what distinguished infant birth weight and childbearing adolescents in high birth rate zip code areas and low birth rate zip code areas in Palm Beach County. Specifically, this study asked what is the relative importance of maternal age, education, race/ethnicity, receipt of prenatal care alcohol use and tobacco use, as predictor variables, to variation in the criterion variables, infant birth weight and childbearing adolescents in high and low birth rate zip code areas of Palm Beach County, Florida, for the year ending 1999?

Healthy People 2010 is a systematic national approach to increase the quality and years of healthy life and eliminate health disparities that exist among segments of our population. The nation's progress in achieving these two goals is being monitored through 467 objectives in 28 focus areas (US DHHS, 2000). Healthy People 2010 is an opportunity for nurses to participate in and have an impact on the discourse of major health and policy issues. More than any other participants nurses witness the human health care experience. Nurses are long standing advocates for individuals, their families and larger communities often when many of those in need have a limited voice or no voice at all (Gebbie, Wakefield & Kerfoot, 2000).

Nurses are powerfully motivated to prevent the violation of human worth and promote human care (David, 1996). Increased awareness coupled with examination of the dynamics that underpin and sustain adolescent pregnancy is foundational nursing knowledge. With this increased knowledge nurses could



develop adolescent health promotion strategies to diminish the devastating impact of “children having children.”

### Current Trends in Adolescent Pregnancy

Recent statistical data support an overall decline in the incidence of adolescent pregnancy in the United States (Alan Guttmacher Institute, 1999; Ventura, Martin, Curtin, Menacker & Hamilton, 2001). Yet US rates of teenage pregnancy remain the highest of any industrialized country in the world twice as high as England, Wales or Canada, and nine times as high as in Japan or the Netherlands (Alan Guttmacher Institute, 1998; Coley & Chase-Lansdale, 1998; Henshaw, 1996; National Campaign to Prevent Teenage Pregnancy, 2000). The disproportionate magnitude of adolescent pregnancy and childbearing in the United States is one of our nation’s greatest social and medical tragedies.

In the United States in 1999, the last year for which data is complete for adolescents (age 15 to 19), the pregnancy rate was 94.3 per 1,000 women and the adolescent birth rate was 49.6 per 1,000 women (Ventura, et al., 2001). Each year, 40 % of all females become pregnant before age 20, representing almost one million teenagers. Of particular significance is that 85 % of these nearly one million annual teen pregnancies are unintended or not fully planned (Alan Guttmacher Institute, 1998; National Campaign to Prevent Teen Pregnancy, 1997). This high percentage of unintended adolescent pregnancies is a pressing public and policy concern that demands strategic interventions and solutions.

The overall percentage of teen births that occur outside of marriage has risen more than fourfold in the span of four decades. Between 1955 and 1994 the percentage of unmarried teens who gave birth increased from 15 % in 1955 to 76 % in 1994 (Henshaw, 1996; McElroy & Moore, 1997; National Campaign to Prevent Teen Pregnancy, 1998). Of the births in 1999 to teens aged 15 to 19 years of age, 79 % were nonmarital (Terry-Humen, Manlove & Moore, 2001). Today teenage mothers account for the largest proportion of all first nonmarital births and are more likely to have subsequent nonmarital births. Specifically, between 1992 and 1995, 35 % of nonmarital births to women 20 years of age and older were preceded by a teenage birth (Terry-Humen, et al., 2001).

The majority of these unmarried adolescent mothers (80 %) remain single and raise their infants with meager assistance from their children's fathers (Wingert, 1998). Single adolescent mothers spend 20 % more of their early motherhood years alone than if they had delayed childbearing (Hotz, McElroy, & Sanders, 1997). The majority of these young, single female-headed families live in substandard, unsafe, and crowded housing with restricted access to adequate social and cultural advantages and are often nutritionally deprived (Sherwood-Hawes, 2000). The children are vulnerable to the adverse conditions associated with poverty and their quality of life is reduced from the outset. Teen mothers have 12 % more children by age 30 to support than if they had delayed childbearing three to four years (Hotz, McElroy, & Sanders, 1997).

The percentage of out-of-wedlock births is significantly higher for Black women (95%) than for White (68%) or Hispanic women (67%) (Coley & Chase-Lansdale, 1998). Racial disparity pervades not only the incidence of adolescent pregnancy but also the demographics of delivery. For instance, in Palm Beach County, Florida in 1999 Black adolescents were greater than three times more likely to deliver a baby than White adolescents (Cornerstone, 2001a). In the United States in 1999 Black women were 1.7 times more likely to deliver a preterm infant and two times more likely to have that infant be of low or very low birth weight than White women (Ventura et al., 2001). A preterm infant is one who is born at less than 37 weeks gestation. A low birth weight (LBW) infant weighs less than 2500 grams at birth and a very low birth weight (VLBW) infant weighs less than 1500 grams at birth (US DHHS, 2000).

Racial disparity in adolescent pregnancy and childbearing also pervade the indicators of infant health, specifically infant mortality rates. While overall infant mortality rates have decreased 27 % from 1987 to 1999, a wide and growing gap persists between Whites and certain racial and ethnic groups, especially Blacks. The 1997 infant mortality rate among Black infants was 2.3 times that of White infants (US DHHS, 2000). Short gestation and low birth weight are the leading causes of neonatal mortality, accounting for 20 % of neonatal deaths.

In 1998 a total of 11.6 % of all births were preterm, and 7.6 % of those were low birth weight (LBW) (Ventura et al., 2000). Of particular concern are the increased rates of preterm delivery in the United States over the last three decades



of the twentieth century (Ventura et al., 2000). For the years 1987-1998 the delivery of low birth weight infants increased 10 % (National Vital Statistics, 2000). Of the 11.6 % preterm births in 1998, 35.8 % were born to women 19 years of age and under, 22 % to young women 15 years and under (US DHHS, 2000). This is a staggering reality when one considers how many more years of fertility a woman has past the age of 19.

When the incidence of birth weight is reviewed for mother's race and ethnicity 13.0/3.1 % of the deliveries were respectively low (LBW) and very low birth weight (VLBW) for Black women and 6.6/1.1 % respectively for White women (US DHHS, 2000). Delivery of a preterm low or very low birth weight infant carries increased risk of infant mortality and morbidity (National Vital Statistics, 2000; US DHHS, 2000). These are hard realities combined with the overwhelming challenges single, adolescent mothers face in their daily struggle to survive and surmount their often disadvantaged environments.

#### Toward a Transformation

What is painfully evident in a race-comparative approach is that differential health trajectories exist. The only way to eliminate health differentials in vulnerable populations is to address the underlying social inequalities that produce them (Geronimus, 2000). Adolescent pregnancy and its related outcomes are both a medical and social problem that are context specific. Understanding the contextual lives of at-risk populations necessitates working from the bottom up.

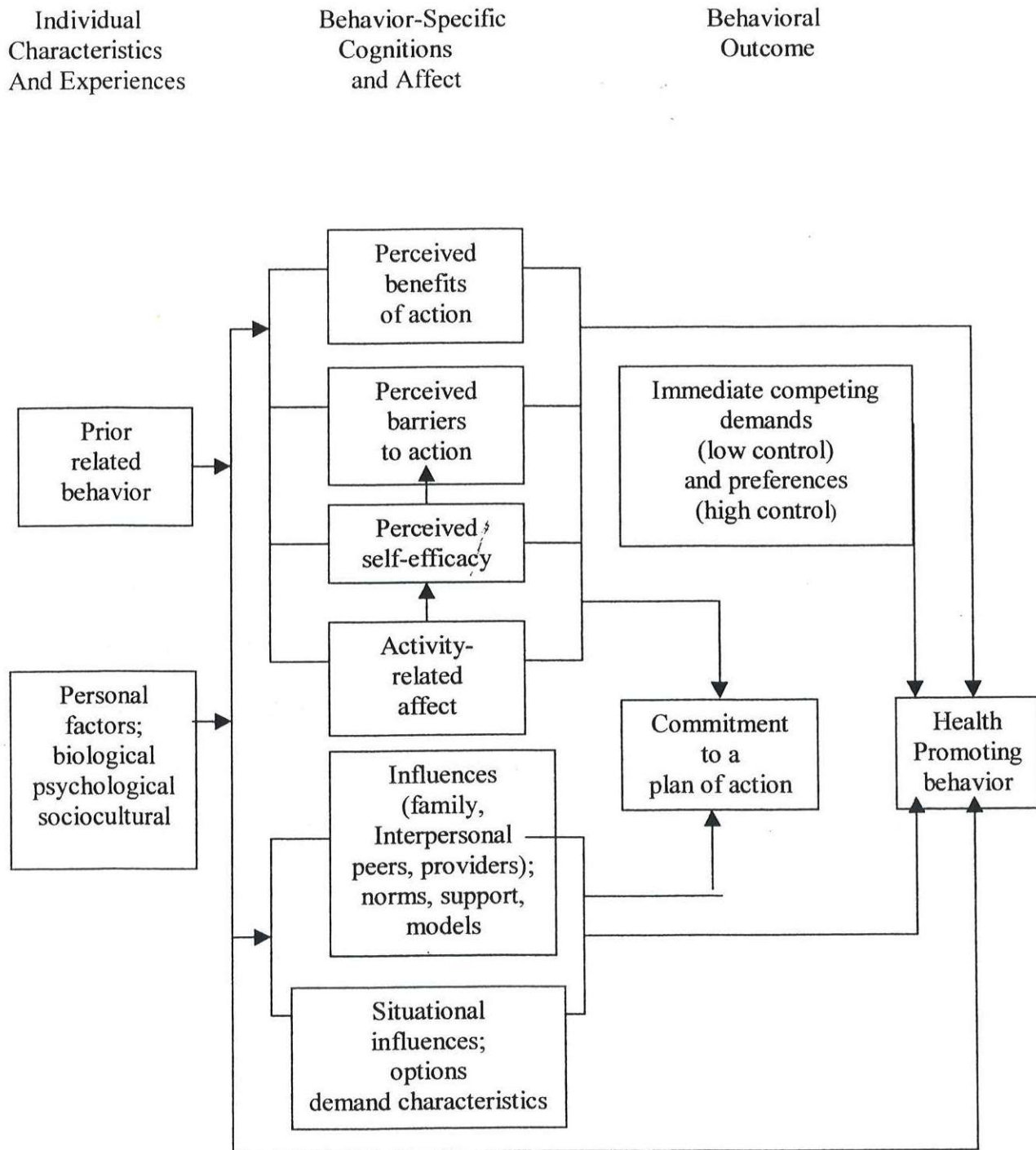
Beginning an investigation with data specific to the local population and its members, brings forth a group's unique perspective and gives voice to the members' experiences. Illuminating connections between context and embedded behaviors provides opportunities for identifying health promotion activities. In this investigation the health promotion focus is on 15 to 19 year old childbearing adolescents, through the lens of nursing.

The Health Promotion Model. Pender (1996) advocated an integrated approach to health promotion that explores and assimilates variant gender, racial, cultural and ethnic factors. Articulation of the role cultural frameworks play in expressions of health are "essential to advance nursing science and provide an empirical base for effective health-promoting and health protecting interventions" (Pender, 1996, p. 16). The Health Promotion Model (HPM) (Pender, 1996) is a approach- or competence-oriented model based on both nursing and behavioral science assumptions. These assumptions emphasize the client's active role in developing and maintaining health behaviors and in modifying the environmental context for those health behaviors. The Health Promotion Model (Figure 1) model depicts the multidimensional nature of persons interacting with their environment as they pursue health in a proactive manner rather than through fear or threat as a source of motivation for health behavior (Pender, 1996).

In the HPM, personal behaviors and factors, categorized as biologic, psychologic and sociocultural precede and directly impact target behavior-specific cognitions and affect as well as health-promoting behavior (Pender, 1996). While



Figure 1 - Health Promotion Model (Pender, 1996).



personal factors are proposed to directly influence behavior-specific cognitions and affect and predict health behaviors, some personal factors cannot be changed and are not incorporated into health-behavior change interventions. Behavior-specific cognitions and affect are of major motivational significance and constitute a critical “core” for intervention, as they are subject to modification through nursing actions (Pender, 1996). Health-promoting behavior is directed toward attaining positive outcomes for the patient that, when integrated into a healthy lifestyle, results in a positive health experience throughout the life span.

The factors investigated in any study should be theoretically relevant to the explanation of a given target behavior. The target behavior under investigation in this study is childbearing by adolescents. The purpose of this investigation is to further explore the relationship between adolescent social, cultural and behavioral indicators and geographically disparate rates of adolescent (15 to 19 years of age) births within Palm Beach County, Florida in 1999.

Through a more in-depth analysis of primary data (Florida Department of Health, 1999a), the intent of this investigation was to predict what distinguished infant birth weight and childbearing adolescents in high birth rate zip code areas and low birth rate zip code areas in Palm Beach County. Specifically, what is the relative importance of maternal age, education, race/ethnicity, receipt of prenatal care, alcohol use and tobacco use, as predictor variables, to variation in the criterion variables, infant birth weight and childbearing adolescents in high and low birth rate zip code areas of Palm Beach County, Florida for the year ending 1999?

Analysis of personal behaviors and factors provides data to support target-specific nursing interventions that could impact health-promoting behaviors.

Nurses have long practiced within the public health nursing model, improving health outcomes and promoting self-sufficiency in the community setting, especially in disadvantaged communities (Koniak-Griffin, Anderson, Verzemnieks, Brecht, 2000; Schlaff, 1991). With the increased understanding of health as multi-factorial and variant across populations that the current study provides, nurses can further develop adolescent health promotion strategies to diminish the devastating impact of pregnant adolescents who deliver babies.

other interdisciplinary teams and effectively lead the health-care system into a future focused on health-promotion and disease prevention.

### Maternal Consequences of Adolescent Childbearing

When compared with their peers who postpone childbearing into their twenties, pregnancy and childbearing impact adolescents' functioning in many areas. The severity of the consequence and impact on each pregnant adolescent will vary. All pregnant adolescents have potential to manifest one or more of the following consequences which include poorer psychological functioning, lower rates of school completion, lower levels of marital stability, additional non-marital births, less stable employment, greater welfare use, higher rates of poverty, and slightly greater rates of health problems for both mothers and their children compared with peers who postpone childbearing (Coley & Chase-Lansdale, 1998; Corcoran, 1999; Geronimus, 2000; Sherwood-Hawes, 2000).

The vast majority of adolescent pregnancies appear to result either from impulsivity, teens' ambivalence about pregnancy, their confusion about how to prevent pregnancy and often times their failure to make any clear decisions about abstinence, contraception or their sexual activity in one way or another (National Campaign to Prevent Teen Pregnancy, 1997). These variations in the quality of adolescent reasoning and subsequent behavior are indicative of the emergence of formal operational thought during this stage of growth and development.

Individuals with formal operational thought are characterized by hypothesis building and scientific reasoning, reflecting a highly developed understanding of



causation independent of content (Piaget, 1977). However, adolescents' lack a full appreciation of how the world is ordered and, as such, the content and function of their thought processes are varied. Most often adolescents apply a purely logical criterion to human and social actions with an insufficient understanding and inability to differentiate the logical world as he/she thinks it to be and the "real" world (Wadsworth, 1996).

Reality is secondary to possibility for the adolescent. This is the very nature of adolescent egocentrism (Piaget, 1977). In the process of exploring and applying their new found abilities the adolescent sometimes loses touch with reality and feels that he/she can achieve anything by thought alone. The adolescent develops a new mode of life where the ideal and the possible captivate both mind and emotion. The consequences of engaging in risky behaviors are perceived as fleeting and modifiable for most adolescents (Piaget, 1977). The adolescent's apparent cursory glance at the consequences of their risk taking behaviors is alarming when one considers the tremendous difficulties the families formed by adolescent childbearing experience.

Psychological and Developmental Functioning. The addition of early parenthood onto the developmental challenges faced by adolescents can interfere with their own processes of individuation and independence from their parents. Adolescent individuation and independence develop through successful transition of the developmental challenges from child to adult. Knowledge and skills acquired during this process include, but are not be limited to acquiring an academic

education, ability to articulate life goals and objectives, having a direction for what comes next and how to get there, an understanding of self and life's potentials, an appreciation of self and a knowledge of one's place in the larger society (Gross & Capuzzi, 2000).

The sequential process of adolescence is where the child moves away from the parents, a relationship that grows more conflictual with each passing year from 12 to 19 years of age (Benoit, 1997). The adolescent experiences a sense of loss of the early childhood world when dependency needs were unconditionally met, and struggles to leave that dependent world behind. Adolescents seek increased autonomy at times demonstrating almost adult-like behavior punctuated by brief episodes of childish regression (Benoit, 1997). In a teenager's perception parents are devalued, friends assume a significant role in the youngster's life and some rule breaking is common (Rossi, 1997).

Adolescent pregnancy has been argued to be associated with low self-esteem, a reduced sense of hopefulness, and inadequate social support (Brooks-Gunn & Chase-Lansdale, 1995; Coley & Chase-Lansdale, 1998). The socially and environmentally disadvantaged conditions, particularly those associated with poverty, in which teens can live are affiliated with every sort of adolescent risk-taking behavior: early and unprotected sexual activity, substance use, delinquency, and truancy (Cornerstone, 2001a). The broad social and economic conditions that undergird these environmental disadvantages lead not only to criminal activity, illegal drug use, increased risk of sexually transmitted diseases and early

motherhood but also to the subsequent problems attributed to adolescent childbearing. Regardless of age, race, ethnicity or gender, disadvantaged youth are most at risk of negative outcomes. Indeed teens who do become mothers are far more likely to have grown up in extremely impoverished circumstances, have experienced school failure and perceive restricted educational and labor opportunities (Geronimus, 1997).

For middle-class teenagers, adolescence is as long a period of time as they choose to stay in school, develop a career, delay marriage and childbearing (Benoit, 1997). Early parenthood, on the other hand, with its endless responsibilities and demands, leaves little time for the normative concerns of teenagers such as dating, peer relations, schooling or career choices (Coley & Chase-Lansdale, 1998). A discussion of the psychological impact of teenage pregnancy is incomplete without taking into account the meaning of physiological maturity in the social construction of adolescence. As Murcott (1980) states “Biologically a child becomes an adult earlier and earlier, socially a child becomes an adult later and later” (p. 13).

During the agrarian and industrial eras physical and psychological maturation converged. Children were economic necessities providing labor and contributing to the economic survival of the family (Benoit, 1997). The decline of these eras, the growth of major cities and migration toward them, the prolonging of the age at which female children complete their education, has changed the social infrastructure within which adolescence is played out (Benoit, 1997;



Schofield, 1994). In the pre-industrial era children would leave school in early adolescence at 12 to 14 years of age, forming identities as economic providers, spouses and parents (Benoit, 1997). Current expectations are that greater numbers of women will train or study beyond the school-leaving age, legally 16 years, but the socially accepted minimum age is 18 years (Schofield, 1994).

The age at which young girls physically mature and are capable of conceiving, and the age at which they might be reasonably expected to achieve economic independence, leave home, perhaps get married and become mothers has widened. Specifically, the difference between the mean age of marriage and the age of menarche is 12 years (Estaugh & Wheatley, 1990). These changes have significance for the roles and expectations of contemporary teenagers.

Today, adolescence is a time for young girls to acquire ideas, values and information while simultaneously protecting their innocence and dependence. Options available to today's teenagers include but are not limited to: going to college for some future profession, learning a trade, getting an entry level position with the hope of working one's way up, and service in the armed forces (Benoit, 1997). A sense of future can have a moderating function on impulsive and instant gratification actions (Rossi, 1997). Teenagers who have a sense of a future career think about the preparations that must be set in motion to achieve their goals.

With respect to risk-taking behaviors, responsible use of contraception could be a step the teenager would take to avoid an unwanted pregnancy and achieve future goals (Benoit, 1997). Contemporary adolescence is a time for



developing skills and acquiring an education to become competitive and self-sufficient in the larger world. Interruption of adolescence with an unplanned pregnancy could precipitate childbearing-related symptomatology which carries with it negative impacts for the adolescent/child's development.

School Completion. Another life option impacted by teen childbearing is the mother's educational attainment. While a number of variables can moderate the effect of adolescent childbearing on a mother's educational attainment, the cumulative effects remain significant. For example, less than one-third of the teens who begin their families under the age of 18 ever complete high school (Maynard, 1997). Peers who delayed childbearing into their twenties increased their chances of high school graduation to 50 % (Maynard, 1997). Dropping out of high school is in itself a very strong risk factor for adolescent pregnancy. Of all adolescents who drop out of school before or shortly after childbirth, only 30 % return and graduate, nearly half the rate of non-mother dropouts (Upchurch & McCarthy, 1990).

It is a social, moral and economic tragedy that teens do not complete their high school education. After declining drop out rates in the 1980s, the 1995 school dropout rate for the nation was 5.4 %, an increase from 4.0 % in 1990 and 1991 (Mortenson, 1997). The reasons students drop out of their educational experience are complex and multifaceted. Researchers have identified categorical variables that are highly intercorrelated with student dropout including family background, school, community and student characteristics (Kushman, Sieber, & Heariold-

Kinney, 2000). These related variables cut across the student's experiences and behaviors, all playing a part in the evolving process of alienation and disengagement from academics and school.

One of the most powerful indicators of student dropout is socioeconomic status including both low level of family income and low level of parent education. Individuals who live in poverty experience more material hardships, acute and chronic psychological stress, overburdened social supports and toxic environmental exposure (Geronimus, 2000). A wealth of negative peer influences abound in poverty-ridden neighborhoods that can accelerate student disengagement (Kushman et al., 2000).

Student characteristics that indicate a need for intervention include poor academic performance, excessive absenteeism, increased hours spent working, involvement in illegal activities, feelings of hopelessness and lowered self-esteem, and substance abuse. Students are also put at risk for school dropout by school environments that are unresponsive to the needs of individuals from different class, ethnic and cultural groups, have ineffective or unfair discipline procedures or lack variable and meaningful learning opportunities and put (Kushman, et al., 2000).

Intervention strategies that address the spectrum of school dropout issues are clinical and systematic in approach. Clinical approaches focus on student and family issues by attempting to establish a supportive partnership-rapport between the school and home environments (Kushman, et al., 2000). At-risk students should be empowered and not enabled. Regardless of a student's race, gender, or

culture, high and attainable expectations should be maintained at all times. Schools with a focus on high academic standards and communal organization exert the strongest positive influence on achievement (Shouse, 1995). Additional systems-level interventions to foster quality learning include teacher pedagogy, the promotion of professional community among educators, and supportive external agencies (Kushman, et al., 2000). The impact and interplay these variables and interventions have for each young adult vary in the long-term process of disengagement that is “dropping out.”

Decreasing dropout rates and increasing trends of high school completion among women have been occurring since the 1970s. While the overall graduation rates for women have increased and the dropout rates have decreased, racial and ethnic differences persist (Weiler, 2000). The percentage of White female high school graduates enrolled in institutions of higher learning has risen from 26.7 in 1975 to 37.1 % in 1990. During the same 15 year period, the percentage of Black women entering college 30.3 to 28.6 % and Latina women fell from 33.2 % to 28.3 % (Weiler, 2000). However, this data obscures the distinction between enrollment in two-year versus four-year institutions. Some evidence suggests that Black and Latina women enroll in two-year colleges as the only viable educational alternative to their limited financial means (US DOE, 1997a).

While the overall percentage of Black and Latina high school women enrolled in higher education declined between 1970 and 1990, the percentage of these women who actually completed four or more years of college increased,



although not on par with White women (Weiler, 2000). The percentage of White women graduating from college rose from 19.1 to 29.8% between 1970 and 1990, compared to an increase from 6.2 to 18.6 % for Latinas and 12.0 to 13.0 % for Black women (US DOE, 1997a).

The economic value of a college education is evident in an analysis of New York City workers and educational attainment between 1980-1990. The attainment of a college degree was found to be worth 164 % more than a high school diploma (Rivera-Batiz, 1994). Higher educational attainment created economic opportunities and is one way that young women create opportunities for themselves. The level of a mother's education was a key determinant in the welfare and survival of her children. The infant mortality rate doubles for infants of mothers with less than 12 years of education (US DHHS, 2000). Interruption of a teenager's education by pregnancy and childbearing during adolescence interferes with educational opportunities for the mother to transition through adolescence and into young adulthood.

Marital Stability. The effect of adolescent childbearing on marital stability is a controversial issue. Teenage mothers have a higher rate of early marriage than later childbearers, with decreased incidence of marriage in their 20s and 30s. They are more likely to divorce, have slightly more children in less amount of time, and spend more of their parenting years as single mothers (Coley & Chase-Lansdale, 1998; Moore, Meyers, Morrison, Nord, Brown, & Edmonston, 1993). These

teenage marital realities are located within an overall historical shift in family and marital trends.

Women and men today marry approximately three to four years later than their 1950 counterparts. In 1950 the median age for women at first marriage was 20.3 and for men it was 22.8. By 1996 the median age at first marriage had risen to 24.8 for women and 27.1 for men (US Bureau of Census, 1998; Weiler, 2000). Today many women remain single longer. Between the ages 25 to 29 62.2 % of Black women, 30.6 % of White women and 29.1 % of Hispanic women have never been married (McElroy & Moore, 1997).

An overall delay in first time marriage combined with a sharp increase in the divorce rate occurred during the 1970s. In 1985, over 23 % of ever-been-married women had been divorced, up from 14 % in 1970 (Weiler, 2000). Between 1960 and 1996, the proportion of children in two-parent families decreased from 88 % to 68 % (US DHHS, 1999). In 1996, 37 % of single parents were never married, and 39 % were divorced (US Census Bureau, 1998). The traditional family, i.e. a married, co-habiting, heterosexual couple with children, is no longer the dominant structure of domestic life and that all groups of society are in the process of redefining what exactly constitutes a family.

Financial Impact. These social and marital realities, coupled with an individual's low educational attainment, are predictive of more non-marital births. Poor employment prospects for teenaged mothers also fosters the poverty that is endemic to adolescent parenthood and ultimately increase the likelihood that

young mothers end up on some form of public assistance (Coley & Chase-Lansdale, 1998; Harper & Vandivere, 1999). Over three-fourths of the adolescent mothers who are unmarried began to receive Aid to Families with Dependent Children (AFDC) within five years of the birth of their first child (National Campaign to Prevent Teen Pregnancy, 1997). Fifty-two percent of all mothers on AFDC had their first child as an adolescent (Moore, Morrison, Blumenthal, Daly, & Bennett, 1993).

The six decade AFDC entitlement program, was replaced by the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (US House of Representatives, 1996). This unprecedented antipoverty legislation established disincentives to long-term family dependence on public welfare. The most recent statistics reveal that of the families receiving Temporary Aid to Needy Families (TANF) 98 % receive cash and cash equivalents, averaging \$358.00 per month. Eighty-four percent of the families received food stamp assistance and almost every family was eligible for medical assistance under the state plan approved under Title XIII (US DHHS, 1999).

Of the 2,631,000 TANF adult recipients, approximately 4 % were teen parents whose child was also a member of the TANF family, creating a negative social heritage (US DHHS, 1999). The average monthly number of TANF families decreased 22 % between October 1996 and June 1997. There was an overall percentage increase of child-only welfare cases. Of all children receiving welfare,

reported (Guttmacher, Lieberman, Ward, Freudenberg, Radosh, & Des Jarlais, 1997; Kirby, Brener, Brown, Peterfreund, Hillard, & Harrist, 1999). Oral contraceptives are free for all women in France and the Netherlands, and for women age 20 and younger in Germany (Moore, 2000). These data suggest that neither the availability of contraception nor the provision of information leads to earlier intercourse. In Europe, these policies lead to significantly lower rates of abortion and pregnancy (Moore, 2000).

Nurses are ideally situated to provide health services to youth in the school setting. School nurses are the critical link between the student, the education system, families, community and health care. Their experience and relationships with students, families and school staff enhance student health and educational outcomes. School nurses who care for adolescents are in a unique position to assess for signs and symptoms of pregnancy, provide education, initiate interventions and referrals and provide follow-up (Richardson, 1999). Nurses investigating teen pregnancy in Iowa found that 14 to 19 year old male and female teens have a desire to discuss sexual behavior and feelings and be provided opportunities for education on sexual development and pregnancy prevention (Aquilino & Bragadottir, 2000). School nurses are invaluable resources for information, guidance and health services related to sexual development and behavior.

Youth development approaches to reducing adolescent pregnancy focus on the opportunities, supports, services, and resources that young people need in



Black children continue to be the largest group (at 41 %) followed by White at 29 % and Hispanic 24 % (US DHHS, 1999).

Growing up at or near the poverty line (\$16,000 for a family of four in 1998) affects childrens' access to nutritious food, adequate health care and their parents' ability to provide quality housing, recreation and educational opportunities (Harper & Vandivere, 1999). Poor children are also more likely than children who are not poor to have difficulties in school and become teen parents themselves (Harper & Vandivere, 1999). It is difficult for young adolescent mothers to escape a life of poverty and hardship as they are constantly challenged to support their children with limited resources and income.

#### Consequences of Adolescent Childbearing for the Children

The greatest injustices of adolescent pregnancy are born by the children of teenage mothers. Children of adolescent mothers experience difficulties that begin in utero and continue with them into adulthood. Mortality rates are highest for infants born to young teenagers aged 16 years and under, and to mothers aged 44 and older. In 1997, the overall infant mortality rate was 7.2 deaths/1,000 live births (US DHHS, 2000). Two-thirds of the 28,045 infants who died before their first birthday in 1997, did so within the first 28 days of life (US DHHS, 2000).

Birth Outcomes. Children of adolescent mothers are more likely to be born small for gestational age (at or below the 10<sup>th</sup> percentile), prematurely, and of low birth weight (Maynard, 1997). Between the years 1995 and 1997 adolescents represented 14.5% of the total small for gestational age (SGA) births (Chavez,



Ananth, & Vintzileos, 2001). The greatest associated risk factor for SGA babies in adolescents is smoking (Chavez, et al., 2001). In a meta-analysis DiFranza & Lew (1995) found smoking by adolescents during pregnancy to be associated with low birth weight (LBW) infants, miscarriages, high number of admissions to neonatal intensive-care units (NICU), infant deaths due to perinatal complications, and deaths from Sudden Infant Death Syndrome (SIDS).

Alcohol is another easily accessible drug abused by adolescents during pregnancy that is associated with SGA infants (Chavez, et al., 2001). Alcohol crosses the placental barrier and is absorbed into the blood of the developing fetus. The developing organs are exposed to alcohol for a longer period of time due to the immaturity of the fetal liver (Gardner, 1997). A fetus exposed to alcohol is at risk for developing fetal alcohol syndrome, alcohol-related neurodevelopmental disorders, or alcohol-related birth defects (Richardson, 1999).

In 1998, a total of 11.6 % of births were preterm, and 7.6 % of those total births were low birth weight infants (US DHHS, 2000). Nearly 23 % of all low birth weight (less than 2,500 grams) infants were born to mothers 19 years of age and under in 1998 (National Vital Statistics, 2000; US DHHS, 2000). Of that total, 5.1 % were extremely low birth weight (less than 1500 grams) which results in an increased risk of neonatal mortality and morbidity (National Vital Statistics, 2000; US DHHS, 2000).

While low and very-low birth weight premature newborns may experience serious neonatal complications, long-term outcomes are not completely known.

Many studies of gestational age, birth weight and long-term outcomes reflect an era of neonatal care that is fundamentally different from the present (Palta, Sadek-Badawi, Evans, Weinstein, & McGuinness, 2000). Low birth weight, premature infants have increased risk for a full range of physiologic complications that have been associated with neurodevelopmental outcomes.

Prior to the development of artificial surfactant, infants weighing less than 1,500 grams at birth had a 2.3 odds ratio of developing chronic lung disease and intraventricular hemorrhage (Palta, et al., 2000). The incidence of intraventricular hemorrhage in newborns weighing less than 1000 grams and less than 30 weeks gestation was 53.8 % and 47.3 % respectively (Mancini, Barbosa, Banwart, Silveira, & Leone, 2000). Intraventricular hemorrhage, chronic lung disease, and apnea of prematurity are independently predictive of cerebral palsy and associated untoward functional outcomes (Mancini, et al., 2000; Palta et al., 2000; Taylor, Klein, Schatschneider, & Hack, 1998).

The incidence of all neurodevelopmental outcomes was 71.4 % for those weighing less than 1000 grams at birth and 26.8 % for those infants weighing 1000-1499 grams at birth (Nunes, Melo, Silva, Costa, Bispo, & Palminha, 1998). Fortunately, the accessibility of comprehensive prenatal care for teenagers is decreasing the incidence of these disabling outcomes in their newborns (Coley & Chase-Lansdale, 1998). Improving the well-being and health of all women, infants, children and their families is the goal of Focus Area 16 of the Healthy People 2010 initiative (US DHHS, 2000). The health of the nation's mothers, infants and

children is of critical importance, not only as a reflection of the current health status of a large segment of the population but also as a predictor of the health of our next generation (US DHHS, 2000).

Cognitive and Emotional Development. The effects of early parenthood extend beyond the immediate pregnancy and birth experience. While few physical differences are observable between infants of teenage and older mothers, delays in cognitive and emotional development begin to emerge during preschool and continue into the later school years (Moore, Morrison, & Greene, 1997). These delays are a function of multiple risk factors associated with adolescent parenthood that include but are not limited to, demographics, socioeconomic and developmental characteristics of teenage mothers (US DOE, 1997a).

The relative importance of individual risk factors varies across developmental domains and social contexts. Preschoolers of teenage mothers have been shown to demonstrate behavior problems, including lower impulse control and higher levels of aggression (Coley & Chase-Lansdale, 1998). When compared to children from families with no risk factors, three times as many four-year-olds with three or more risk factors have speech problems. That is, they speak in a way that is not understandable to strangers and stutter or stammer. Twice as many have short attention spans and are said to be very restless (NCES, 1995).

Children who have problems concentrating, or act up and disrupt the class are not learning to meet their capabilities. These children have a 40 to 50 % higher chance of being retained in kindergarten (US DOE, 1997b). In 1995, 60 % of



children retained in kindergarten were reported to have one significant school performance problem and 18 % had developmental delays. Twice as many retained students were said to have trouble taking turns and sharing with others (US DOE, 1997b).

Children born to mothers who were 17 or younger at their births, when compared with children of 20 to 21 year old mothers, scored lower in reading recognition and mathematics (4 points) and in reading comprehension (3 points) on age-standardized achievement tests in the period up to age 14 (Moore, Morrison, & Greene, 1997). These differences carry over into adolescence in the form of greater likelihood of being rated unfavorably by teachers in high school and repeating a grade. Birth order is insignificant, as these deficits are evident for subsequent as well as firstborn children of adolescent mothers (Maynard, 1997).

Abuse and Neglect Potential. New families in which the mother's age was under 18 at the time of first birth were approximately 2.5 times more likely to become an indicated case of abuse and neglect than were those where the mother was 20 or 21 (Goerge & Lee, 1997). Children born to young teens (less than or equal to 17 years old) were 1.5 times more likely to become victims of indicated abuse and neglect by the age of five. While the abuse/neglect incidence rates have been increasing for all children in recent years, children born to mothers under the age of 20 at the time of the child's birth are far more likely to be victims of repeated abuse/neglect than often leads to placement in foster care (Maynard, 1997).

When compared with families whose mothers were 20 to 21 years old, families formed by the birth of a child when the mother was less than or equal to 17 years of age were over 2.5 times more likely to have a child placed in foster care by the time the first child reached the age of five years (Goerge & Lee, 1997). The duration of time in foster care is no longer significantly different for these two groups. However, first-born children tend to stay in foster care for a slightly shorter time than other siblings and Black children remain in foster care significantly longer than White children (Goerge & Lee, 1997).

One of the most tragic consequences of adolescent childbearing is that teen daughters are 22 % more likely to become teen mothers themselves (Maynard, 1997). This reality substantiates and perpetuates the intergenerational cycle of social disorganization and poverty endemic to adolescent pregnancy. Teenage pregnancy and childbearing interrupt opportunities for positive educational, job and life successes for the mother, child and society.

#### Consequences of Adolescent Childbearing for Society

Societal costs of adolescent childbearing include diverted resources to mitigate the problems associated with teenage parenthood: (1) welfare program administration, (2) building and maintaining prisons, (3) providing foster care, and (4) intensive care unit costs of preterm babies. The lower baseline estimate of adolescent childbearing itself costs taxpayers \$7 billion annually for social services and foregone tax revenues. The upper limit estimate of potential savings to taxpayers from eliminating teenage childbearing, while addressing the maximum



set of precipitating factors, is \$15.2 billion annually (Maynard, 1997). This estimated amount is the amount of social welfare the nation would increase annually if all would-be young teen childbearers were convinced to delay childbearing until 20 or 21 years of age.

The critical point for young teens who begin parenthood before age 18 is their life prospects are poor by any measure. Young teens who bear children earn only 57 % as much as their peers who delay childbearing until 20 or 21. Spouses of adolescent mothers earn 38 % as much as spouses of older bearing counterparts (Maynard, 1997). Adolescent mothers bear substantial out-of-pocket costs for medical care for their children despite their relatively low incomes (Wolfe & Perozek, 1997). The overall result is that the mother's annual income, after taxes and child care costs, averages about \$15,000. The average cost to taxpayers to administer public assistance is \$294 annually per parent (Maynard, 1997).

The rate of preterm births increased in 1999 to 11.8 %, up 11 % from 10.6 % in 1990 (Ventura, et al., 2001). Approximately 25% of the 1999 preterm births were low birth weight infants born to mothers 19 years of age and under (Ventura, et al., 2001). Infants born prematurely require neonatal intensive care (NICU) technology. NICU has the potential to provide neonatal surgery, mechanical ventilation and special care for the sickest newborns in the hospital or transferred from another institution.

Median NICU treatment costs across all infants in 1994 was \$49,457 with an average length of stay of 49 days (Rogowski, 1999). Treatment costs are

positively skewed, with 90<sup>th</sup> percentile treatment costs of \$130,377 and a maximum of \$889,136. The length of stay has a similar long right tail, with the 90<sup>th</sup> percentile being 99 days and the longest length of stay 632 days (Rogowski, 1999). The youngest mothers are most likely to deliver a low birth weight infant and least likely to have the financial resources to pay for their care (Ventura et al., 2001).

Outcomes for the children of adolescent mothers are poor. Children of teen parents spend an average of 3.3 % of their childhood in foster care, adding roughly \$1000 per adolescent parent to the annual child welfare costs. An average of 10.3 % of the male children will end up in prison, contributing an average of \$3,385 to the country's criminal justice costs for their incarceration alone (Maynard, 1997). Public expenditures for services provided to current and former teen parents are great.

Based on the most highly controlled measures, each adolescent mother costs taxpayers an average of \$2,831 per year that could be saved if she delayed childbearing until 20 or 21 (Maynard, 1997). In a steady economic state, taxpayers spend \$1.4 billion more annually for foster care services, \$1 billion more on prison costs due to higher incarceration costs than if childbearing was delayed until age 20 or 21 and forego \$1.2 billion in tax revenues as a result of lower productivity of children born to teen mothers (Grogger, 1997; Maynard, 1997).

Educational programs fall into two broad categories; those that teach only abstinence and those that teach abstinence plus effective contraceptive use. The federal government has long advocated abstinence-only programs. Under the 1996 Personal Responsibility and Work Opportunity Reconciliation Act (US House Representatives, 1996), \$50 million dollars has been available to states each year from 1998 through 2002 for the exclusive education purpose to teach the social, emotional, and health gains that can be realized by abstinence from sexual activity. The State of Florida advocates abstinence-only education programs in their schools.

The European approach is in sharp contrast. A European study panel of health care professionals regard sexuality education as a public health issue and not a moral one (Moore, 2000). With the exception of a Roman Catholic priest on the Netherlands panel, the European participants did not believe that abstinence until marriage was a realistic way to prevent adolescent pregnancy. Some of the health care participants expressed that such a policy was disrespectful of teens' rights to decide for themselves (Panel, 1998).

Meta-analyses of randomized controlled trials found sex education programs in the United States did not significantly impact or increase sexual behavior in females or males (Franklin & Corcoran, 2000; Franklin, Grant, Corcoran, Miller, & Bultman, 1997; Mitchell-DiCenso, Thomas, Devlin, Goldsmith, Willan, Singer, Marks, Watters, & Hewson, 1997). The Netherlands, which has the most open discussions with adolescents about sexuality, especially



safe sex, reported the oldest age at first intercourse (Moore, 2000). A wide base of public support for more comprehensive sexuality education programs exists. A recent poll found 93 % of the general public supported comprehensive sexuality education in high schools, and 84 % supported it in junior high schools (Siecus, 1999).

Yet, knowledge itself is not enough to ensure effective and consistent contraceptive use. Effective contraceptive use by teens is the result of a complex interplay of knowledge, skills motivation, access, peer, partner, public and parental influence (Cornerstone, 2001b). Whether we are encouraging adolescents to delay the onset of sexual activity or providing sexually active teenagers with information and health services, it is essential that we provide them with the educational tools they need to save their lives. Programs that provide access to contraception and the specific skills to use a particular method include school-based or school-linked clinics, family planning clinics, condom distribution programs, private physicians, pharmacies and managed care providers.

Community-based, clinic settings that emphasized contraceptive distribution and knowledge building were found to be the most effective in increasing contraceptive use and thus preventing pregnancy across all populations (Franklin & Corcoran, 2000; Franklin, Grant, Corcoran, Miller, & Bultman, 1997). School-based clinics are another ideal environment to provide sexuality education and contraceptive services. In studies of students in New York and Seattle public high schools where condoms were provided no increase in sexual activity was



order to develop into productive and independent adults (Cornerstone, 2001b). Changing the perspective of young people is a challenge that requires community involvement and long-term interventions. Youth development programs are designed to improve adolescents' life skills, increase their opportunities and life options rather than just keeping them problem-free. While the diversity of programs makes comparisons difficult, and evaluations have shown variable results, the features they have in common suggest what makes them successful.

All programs increase participants' opportunities to interact with adults in some capacity, either through weekly meetings, jobs, closer relationship with schools, or other activities. Research indicates that such connections reduce teen pregnancy (Resnick, Bearman, & Blum, 1997). These programs also decrease teen participants discretionary time to engage in at-risk behaviors. Finally, and perhaps most importantly, all successful programs have the potential to increase adolescents' belief in a bright future. Youth development programs offer hope for doing meaningful work, getting a job, or being successful in school and may increase teens' motivation to avoid early childbearing (Kirby, 1999).

A successful asset-building approach to youth development is Oklahoma City's Healthy Empowered and Responsible Teens of OKC (HEART of OKC). This program serves teens from some of the most economically disadvantaged and ethnically diverse neighborhoods in Oklahoma City. Nine key assets, including cultural respect, constructive use of time, skills for meaningful employment, and aspirations for the future are addressed by the HEART of OKC team (Anonymous,

2000). Public health, education, nursing and law students from the local universities work with the teens in one-on-one mentoring, academic enrichment, career counseling, and leadership development camps. The premise undergirding the program is the assumption that young people who are experiencing success, who are supported in their communities, who are hopeful about their futures will postpone pregnancy and childbearing (Anonymous, 2000).

Successful secondary prevention programs touch the lives of pregnant teens in meaningful, consistent ways. At Atlanta's Grady Memorial Hospital, the teen clinic is dedicated to providing consistent prenatal care, childbirth education, and emotional and psychological support to impoverished adolescents and their support network (Foster, Bond, Ivery, Treasure, Smith, Sarma, Engram, Church, & Cathcart, 1999). A team of health care professionals are actively and consistently involved in the lives of these adolescents as support people to maximize the possibility of teens becoming mentally and physically healthy mothers and avoiding repeat pregnancy for five to seven years. Nurses, as team members, monitor the mother's health, schedule tests and provide curriculum-based childbirth education classes and tours of the labor and delivery area (Foster et al., 1999). Nurses lend themselves as role models and are the critical liaison between the medical model and a nurturing environment to these high risk adolescents to increase the teenager's self-esteem.

### Reformulating the Context

Nearly one million adolescent girls in the United States become pregnant every year. Pregnancies that do occur are often in adolescents who are most likely unmarried, at the lower end of the educational spectrum, from impoverished backgrounds with few prospects for economic or emotional support of themselves or their children. More than 180,000 of these pregnant adolescents are below the age of 18 and are initiated into adolescent parenthood through their decision to bear their child (Maynard, 1997).

The consequences for these young mothers are mostly non-economic and emerge several years after their first teenage birth. What is clear from current research is that catastrophic consequences exist for the children of teenage mothers and that these consequences are creating a heavy economic burden in both direct and indirect costs to American taxpayers and to society in general. The most conservative cost analysis impact of current adolescent childbearing exceeds \$6 billion dollars on state and federal budgets annually (Maynard, 1997).

In a ideal situation where it would be possible to eliminate or compensate all differences between adolescent and later childbearers, the net gain to society in lower public assistance and social service costs and higher productivity could exceed \$37 billion annually (Maynard, 1997). However, breaking the cycle of adolescent parenthood must address a broader set of precipitating factors and consequences than previous cost estimates which narrowly focused on public welfare costs. Solutions must involve substantial investigation into the



### Aim and Purpose of The Study

Attempts to understand and reverse the growing health inequalities in the US will be ineffective without taking race/ethnicity and poverty into account. The association between challenging social and psychological factors and increased morbidity and mortality is one of the most robust findings of social epidemiology (Geronimus, 2000). Those of lower socioeconomic positions have limited access to the information, technologies and services that could ameliorate their risk. They are more likely to engage in unhealthy behaviors, suffer depression, or engage in high-effort coping with challenging life circumstances which are risk factors for stress-related diseases in impoverished populations (Geronimus, 1992; Lantz, House, Lepowski, Williams, Mero, & Chen, 1998; Marmot, Kogevinas, & Elston, 1987). There appears to be a “dose-response” relationship. Immersion in the chronic barriers of long-term poverty is more devastating to health than short poverty spells for adults and children, suggesting a cumulative health impact of persistent disadvantage (Geronimus, 2000; Geronimus, 1992; Lynch, Kaplan, & Shema, 1997).

The purpose of this investigation is to further explore the initial comparison between adolescent social, cultural and behavioral indicators and the geographically disparate rates of adolescent (15 to 19 years of age) births within Palm Beach County, Florida in 1999. Through a more in-depth analysis of primary data (Florida Department of Health, 1999a), the intent of this investigation is to explain what distinguishes infant birth weight and childbearing among adolescents



in high and low birth rate zip code areas in Palm Beach County. Specifically what is the relative importance of maternal age, education, race/ethnicity, receipt of prenatal care, alcohol use and tobacco use as predictor variables, to classification accuracy in the criterion variables of high and low birth rate zip code areas and high and low infant birth weight in Palm Beach County, Florida for the year ending 1999?

Examining the impact cultural and behavioral indicators have on personal and social coping mechanisms links social background and context factors with biological mechanisms. The biological mechanism being explored, is childbearing in adolescents. Articulation of the roles cultural frameworks play in expressions of health is vital to the promotion of nursing science and provide an empirical base for nurses to develop adolescent health-promoting and health preserving interventions.

## Chapter 3

### Method

In early 2000, county leaders and representatives from the Palm Beach County Health Department initiated a dialogue with Cornerstone Consulting Group about the development of a comprehensive plan to address adolescent pregnancy in Palm Beach County. As part of the initial investigation, Cornerstone (2001a) examined year 1999 teen birth rates within Palm Beach County by postal zip code. Cornerstone (2001a) found that several populations and areas within the county experienced much higher than average levels of unemployment, poverty and teen childbearing. Since social disorganization and poverty disproportionately affect minorities, negative outcomes among Palm Beach County adolescents were found to be concentrated in these disadvantaged areas (Cornerstone, 2001a).

Four postal zip code areas had birth rates between 98 and 153 per 1000 women age 15 to 19 years of age (Florida Department of Health, 1999b). These teen birth rates were two to three times higher than the countywide average of 49 births per 1000 women age 15 to 19 and the national average of 49.6 births per 1000 women age 15 to 19 (Florida Department of Health, 1999a; Ventura et al., 2001). The four areas in Palm Beach County with the highest teen birth rate in sequential order were: Lake Worth (postal zip code 33460), West Palm Beach (postal zip code 33407), Pahokee (postal zip code 33476), and Belle Glade (postal zip code 33430) (Cornerstone, 2001a).

based on each specific zip code area's teen birth rate in relation to the county teen birth rate average (Cornerstone, 2001a; Florida Department of Health, 1999a).

Four postal zip code areas with 346 adolescents had teen birth rates of 100 to 153 per 1000 women; two to three times above the county birth rate average (Florida Department of Health, 1999a). These four postal zip code zones were designated as the top hot spot areas in the initial investigation (Cornerstone, 2001a). Data from the hot spots were compared to fifteen postal zip code areas with 97 adolescents with birth rates of 1.4 to 24.4 per 1000 women; two to three times below than the county birth rate average (Florida Department of Health, 1999a; 1999b).

An a priori power analysis was attempted to determine an adequate sample size for the investigation. In a priori power analysis the effect size to be detected is specified [a measure of the distance between the null ( $H_0$ ) and the alternative hypotheses ( $H_1$ )], the alpha level and the desired power ( $1-\beta$ ). A priori analysis is considered the ideal power analysis in that low error probabilities alpha and beta can be achieved for any specification of the effect size (Erdfelder, Faul, & Buchner, 1996). However, it is not possible to estimate power in predictive discriminant analysis, especially when z-scores are used to assess statistical significance (Morris & Meshbane, 1995).

The critical value of the test statistic (z score in this predictive discriminant analysis) defines the boundary of the rejection region for the null ( $H_0$ ) hypothesis. Standardized z scores are necessary to determine a predictor variable's relative importance to the accuracy of an object's classification into one or another criterion groups (Kachigan, 1991). In this investigation,



a z-score of 1.96 was statistically significant when  $\alpha = .05$  and a z-score of 2.58 was statistically significant when  $\alpha = .01$  (Evans, 1996).

Alpha level represents the observed probability of obtaining a sample statistic of the observed magnitude or one further from zero when the null ( $H_0$ ) hypothesis is true. The selection of an alpha level is a subjective decision that signifies the level of risk one is willing to accept of making a Type I error. As such, alpha level is the probability of falsely accepting the alternative ( $H_1$ ) hypothesis when in fact the null ( $H_0$ ) is true (Erdfelder, Faul, & Buchner, 1996). There is a long tradition of using either an  $\alpha = .05$  or  $\alpha = .01$  as Type I error probability (Cowles & Davis, 1982). This investigation assumed an experiment wide alpha level of .05.

Effect size, or practical significance, refers to the underlying population rather than a specific sample and defines the degree of deviation considered most important to warrant attention (Erdfelder, Faul, & Buchner, 1996). Effects that are smaller than the specified effect size are considered insignificant. This analysis assumed a 10 % improvement over chance expectations of correctly classifying, through external, cross-validated hit-rate estimates, the 10 best subsets of optimal classification accuracy (Morris & Meshbane, 1995). To assess practical significance of the Pearson correlation coefficients, criteria of .1, .3, and .5 were utilized respectively to assess small, medium and large effect sizes (Cohen, 1992).

The power of a test is defined as  $1 - \beta$  with  $\beta$  being the probability of falsely accepting the null ( $H_0$ ) when in fact the alternative ( $H_1$ ) hypothesis is true. Beta probability refers to the level of risk one is willing to accept of making a Type II error. No specific conventions have been established with respect to Type II error probability. However, some researchers suggest using  $\beta = .20$  as a standard level while other researchers prefer alpha and beta levels to be equal



(Cohen, 1988). This investigation uses a beta of .10, with 90% power of detecting a false null (H0). The closer a test's power is to 1, the greater the researcher's confidence in the validity of the study's results.

### Design

Predictive discriminant analysis was utilized to test the ability and strength of the predictor variables of maternal age, education, race/ethnicity, receipt of prenatal care, alcohol use and tobacco use in their contribution to classification in the criterion variables of high and low infant birth weight and childbearing adolescents in high birth rate zip code areas and low birth rate zip code areas in Palm Beach County in 1999. The overall objectives of predictive discriminant analysis are essentially the same as regression analysis and can be summarized as: (1) to determine if a relationship in fact does exist between two or more variables, (2) to describe the nature of the relationship, should one in fact exist, in a mathematical equation, (3) to assess the degree of accuracy or prediction achieved by the discriminant function, and (4) to assess the relative importance of various predictor variables in their contribution to classification into one of the criterion variable groups (Kachigan, 1991).

Variables. Predictive discriminant analysis is an extension of the concept of simple regression. However, rather than using values on one predictor variable to estimate values on a criterion variable, several predictor variables are used. The aim is to reduce even further the errors of prediction, or equivalently, to correctly classify with optimal accuracy, predictor variables into one or another of the criterion variable groups (Kachigan, 1991). The criterion or dependent variables were high and low infant birth weight and childbearing adolescents in high birth rate postal zip code areas and low birth rate postal zip code areas in Palm Beach County for

the year ending 1999. The 19 postal zip codes were converted to a single dichotomous variable where 1 = low birth rate and 2 = high birth rate zip code and used as one criterion variable. Infant birth weight was a demographic variable that was entered for each delivery as an absolute number for its meaningful quantity. Infant birth weight was dichotomized by a median weight criteria split of above and below average. The dichotomous, nominal variables of infant birth weight and postal zip code were used as criterion variable groups in a discriminant function analysis.

Predictor or independent variables that were assessed for the degree in which they collectively accounted for classification accuracy in the criterion variable groups included maternal age, education, race/ethnicity, receipt of prenatal care, alcohol use, and tobacco use. Upon receipt of the raw data from the Palm Beach County Health Department, initial correlations were run to omit independent variables that were unrelated to the dependent variable or were redundant. Thus  $r$ 's of + or - 0.20 further from zero would indicate the independent variable was retained (Cohen, 1988). In terms of eliminating redundant independent variables, correlations of 0.80 would indicate that the variable was retained (Cohen, 1988).

Cases with missing values on the most critical variables were excluded. In this investigation the most critical variables were age, education, race/ethnicity, and receipt of prenatal care. For the remaining cases, multiple procedures were applied to impute missing values. These included, but were not limited to imputation of the mean, the median or a value generated via a regression for missing values.

Maternal age, years of education, and the number of prenatal visits, were demographic variables that were entered as absolute numbers for their meaningful quantity. Initial correlations were run on the race/ethnicity groups as previously detailed. The intent was to combine race and

ethnicity, delete duplicate entries deleted and code remaining dummy values for a total that did not exceed six variables with resultant use of Black, Hispanic, Haitian, Mexican Hispanic, Puerto Rican Hispanic, and Central / South American Hispanic. Prenatal care was coded for number of visits, alcohol use, tobacco use were coded first as yes/no response for the behavior and also for number of drinks and cigarettes smoked. Alcohol use was eliminated from the discriminant function after frequency analysis failed to demonstrate variance in alcohol use.

In relevance to Pender's (1996) Health Promotion Model, all predictor variables were personal factors that were theoretically related to the target behavior, i.e. childbearing by adolescents in high and low birth rate zip code areas in Palm Beach County. Specifically, how did amount of prenatal care, and tobacco use as health behavior options, maternal age as a biological personal factor, race/ethnicity and years of education as sociocultural personal factors predict variation in infant birth weight and childbearing adolescents in high birth rate zip code areas and low birth rate zip code areas in Palm Beach County? What distinguishes birth weight in infants' of adolescent mothers and childbearing adolescents in high and low birth rate zip code areas? The operational statements of the research hypotheses are as follows:

Research Hypotheses:

H1: A model can be found that allows classification, significantly better than chance expectations, of infants as high versus low birth weight using maternal age, education, race/ethnicity, prenatal care, alcohol use and tobacco use as predictor variables.



H2: A model can be found that allows classification, significantly better than chance expectations, of childbearing adolescents into high birth rate zip code areas versus low birth rate zip code areas in Palm Beach County, Florida, using maternal age, education, race/ethnicity, prenatal care, alcohol use and tobacco use as predictor variables.

To protect the experiment wide alpha level of .05, a Boneferroni correction will be utilized. A Boneferroni correction is a method to control for the risk of making a Type I error in multiple comparison studies (Garb, 1996). A second discriminant function increases the probability that a single statistical result has occurred by chance when there is no real difference between the groups, and in the population the null hypothesis is true. To protect the experiment wide alpha of .05, a hypothesis wide alpha of .025 will be instituted.

#### Data Collection

Live birth vital statistics were gathered from pregnancy data on the birth record with supporting documentation from the maternal pregnancy and delivery medical records. All live birth vital statistics were entered, edited and corrected (Florida Department of Health, 2000) by each county's health department in cycles completed within 30 days of the event. The annual statistical data files were completed with the end of the February processing cycle, following the end of the previous calendar year. Florida provides the National Center for Health Statistics (NCHS) with monthly vital event data records for processing in accordance with their



specifications. Those NCHS prepared files are used for national publications and to evaluate data comparability and quality assurance (Florida Department of Health, 2000).

Data utilized were originally collected and analyzed in the initial investigation of disparate (high and low) rates of childbearing in Palm Beach County by zip code area (Cornerstone, 2001a). Live birth data existed in the Florida Vital Statistics Annual Report (Florida Department of Health, 1999a). Specifically, the Palm Beach County Live Birth Specifications Subsection for childbearing adolescents, 15 to 19 years of age in 1999 (Florida Department of Health, 1999b). Data set limitations were the parental self-report quality of pregnancy data and the finite information available in regards to at-risk behavior engagement, living situations and physical environments in the birth record.

#### IRB Approval

Application for this investigation was made to Barry University Institutional Review Board on August 3, 2001. Final approval by expedited review was obtained August 15, 2001 from the Human Subjects Committee (Appendix A).

## Chapter 4

### Data Analysis

Multivariate statistical analysis including predictive discriminant function was employed as the analysis technique. The two key benefits derived from predictive discriminant analysis were the classification of objects into criterion variable group(s) based on knowledge of predictor variable values and the assessment of the relative degree to which each predictor variable contributes to the classification accuracy in the criterion variable group(s) (Kachigan, 1991). With the assistance of a statistician, the Statistical Package for the Social Sciences (SPSS) version 10.1 (2000) statistical software was used to analyze the nature and strength of relationship of predictor variables of maternal age, education, race/ethnicity, amount of prenatal care, alcohol use and tobacco use in accounting for classification accuracy in the criterion variables of high and low infant birth weight and childbearing adolescents in high birth rate postal zip code areas and low birth rate postal zip code areas.

### Results

The predictive discriminant analysis results were consistent with the research hypotheses. Models were identified that allow classification of cases into the criterion groups of high and low infant birth weight and high and low birth rate zip code areas with significantly greater than chance expectations. The results were

statistically significant and of practical significance, using the maximum chance criterion.

Several better than chance predictor variable subsets were selected for optimal classification accuracy into the criterion groups. The performance of the 10 best subsets selected is sufficiently similar between the two criterion groups. The predictors that most of the subsets had in common were mother's age, mother's education, mother's smoking, number of prenatal visits, birth weight, Black, Hispanic and Mexican Hispanic.

The correlation matrix demonstrated a number of relationships of small to large effect with statistical significance between the criterion groups and certain predictor variables. There was a negative correlation between low birth rate zip code areas, infant birth weight, race/ethnicity and number of prenatal visits. Those who were black, Mexican and Central or South American Hispanic were more likely to be from high birth rate zip codes, smoke, have low birth weight infants, fewer prenatal visits and less education. Those who were black were more likely to self-identify as mixed race including either Hispanic, Mexican, Puerto Rican or Central or South American Hispanic. A positive correlation was observed between low birth rate zip codes, higher infant birth weight, more years of education, more prenatal visits and being a race other than Hispanic.

#### Data Analysis Protocol

As articulated in chapter 3, initial analysis of the raw data from Palm Beach County Health Department involved frequency and correlational analysis to

examine the value of each variable and search for any redundant categories. Cases with missing values on the most critical variables and variables that lacked variance were excluded. The initial raw data detailed 15,000 cases on 10 predictor variables.

Sample Description. Cases were deleted that lived outside the desired high birth rate and low birth rate zip code areas. High birth zip code areas were 33460, 33407, 33476, and 33430. Low birth rate zip code areas were 33467, 33469, 33478, 33487, 33496, 33498, 33410, 33414, 33418, 33428, 33431, 33433, 33434, 33446, 33458. Girls younger than 15 or older than 19 were deleted, leaving a total of 459 cases; 113 in the low birth rate zip code area (low = 1) and 346 girls in the high birth rate zip code area (high = 2).

In addition to alarming levels of adolescent childbearing in the four highest zip code areas of Palm Beach County, these areas demonstrate a significant number of characteristics of distressed communities including low per capita income (some below the poverty threshold), high rates of unemployment, large percentage of children on Medicaid, and higher school drop out rates (Cornerstone, 2001a). These areas all share one of the most important characteristics for negative development, poverty. By a variety of measures these communities are risky places in which young people to grow up. In addition, the youth population of these areas is expected to grow rapidly in the near future, adding numbers to a group of teens at risk of negative development. Table 1 contains selected demographic data on each of the top four hot spot zip code areas



Table 1

Hot Spot Zip Code Demographic Data

Zip Code	1999 Teen Birth Rate	Total Population	% Pop Black/ Hispanic	Per Cap Income	Unem- ployment Rate	% Children on Medicaid	Reported Cases Child Abuse	Number of Juvenile Crimes	Gradua- tion Rate
33460 Lake Worth	153.0	30,143	16.38 / 21.62	19,770	5.50	33.1	393	383	55.8%
33407 WPB	107.0	23,966	51.17 / 8.39	15,510	7.80	63.56	441	345	62.6%
33476 Pahokee	105.7	8,331	62.60 / 20.17	8,498	14.2	71.8	248	137	68.1%
33430 Belle Glade	100.0	23,208	59.53 / 27.44	9,201	14.20	54.4	212	208	54.3%
PB County	49	1,049,420	14.8 / 11.2	29,133	5.0%	BZO*	BZO*	BZO	63.6%

\*BZO = By Zip Only

The frequency analysis demonstrated alcohol use (ALCOHOLU) as a constant (2 = no); therefore average number of drinks (AVG\_DRI) was also a constant (0 = zero). As such, neither could be used as a predictor variable and they were eliminated from the analysis. Table 2 illustrates the lack of variance in alcohol use.

Table 2

Alcohol Use (ALCHOLU) Frequency

Alcohol Use	Frequency	Percent	Valid Percent	Cumulative %
Valid 2	459	100.0	100.0	100.0

Mother's race (MORACE) and mother of Hispanic or Haitian origin (MOHISP) were dummy coded, based on the number of cases per ethnic group. The dummy variable BLACK was created to replace mother's race (MORACE) (Table 3). The rationale undergirding this decision is that most race cases had values of 1 (White) or 2 (Black), three races were represented by 1 or 2 cases, and one race was represented by 8 cases (Florida Department of Health, 2000). These sample sizes were too small to warrant a second dummy variable. In the newly created variable BLACK = 1 (yes) if in the original mother's race (MORACE) = 2 (Black); otherwise BLACK = 2 (no).

Additionally, five dummy variables were created to be used in place of mother of Hispanic or Haitian origin (MOHISP) (Florida Department of Health, 2000), based on the number of cases per ethnic category. Only ethnic categories with sufficiently large sample size were considered for dummy coding. The five dummy variables created to replace mother of Hispanic or Haitian origin (MOHISP) were: HISPANIC, HAITIAN, Mexican Hispanic (MEXICAN), Puerto Rican Hispanic (PUERTO) and Central or South American Hispanic (CSAMER). Tables 3 and 4 shows the race frequency breakdown within mother's race (MORACE) and mother of Haitian or Hispanic origin (MOMHISP) predictor variables prior to reclassification and dummy coding.

Table 3

Mother's Race (MORACE) Frequency

Race	Frequency	Percent	Valid Percent	Cum %
0	2	.4	.4	.4
1	221	48.1	48.1	48.6
2	226	49.2	49.2	97.8
3	8	1.7	1.7	99.6
7	1	.2	.2	99.8
8	1	.2	.2	100.0
Total	459	100.0	100.0	

Table 4

Mother of Hispanic or Haitian Origin (MOMHISP) Frequency

Race	Frequency	Percent	Valid Percent	Cum %
0	289	63.0	63.0	63.0
1	45	9.8	9.8	72.8
2	35	7.6	7.6	80.4
3	5	1.1	1.1	81.5
4	55	12.0	12.0	93.5
5	3	.7	.7	94.1
6	27	5.9	5.9	100.0
Total	459	100.0	100.0	

Table 5 contains the reformulated set of predictor variables with their associated key codes. These 7 original and 5 dummy race/ethnicity predictors were examined for optimal classification accuracy into the criterion variable groups via CLASSVSP, an all-possible-subsets predictive discriminant analysis program (Morris & Meshbane, 1995). Pearson correlations were run between each predictor and criterion and each pair of predictors to assess the strength and direction of the linear relationship between the variables (Evans, 1996).



Table 5

Predictor Variable Key

Predictor Variable	Variable Value
1	Birth weight in grams (1 = below average or 2 = above average)
2	Mother's education
3	Mother's age
4	Whether mother smokes (yes = 1 or no = 2)
5	Number of cigarettes
6	Number of prenatal visits
7	Black (yes = 1 or no = 2)
8	Hispanic (yes = 1 or no = 2)
9	Haitian (yes = 1 or no = 2)
10	Mexican Hispanic (yes = 1 or no = 2)
11	Puerto Rican Hispanic (yes = 1 or no = 2)
12	Central or South American Hispanic (yes = 1 or no = 2)

Predictive Discriminant Analysis. CLASSVSP (Morris & Meshbane, 1995)

results, for the criterion zip code, indicated that 8 of the 10 best predictor subsets

overall yielded 359 correct cross-validated classifications, 45 of 110 of low birth rate zip codes and 314 of 321 for high birth rate zip codes. Results indicated that mother's race as Black or Hispanic and maternal smoking were the most accurate predictors of high and low birth rate zip code classification. Table 6 contains the predictive discriminant all-class-subsets analysis results for the twelve predictor variables and the criterion group means for zip code.

Table 6

Discriminant Analysis: Zip Code

Predictor	Group One Means (N = 110)	Group Two Means (N=321)
1)	3293.7909	3122.7664
2)	10.3636	9.9408
3)	17.8909	17.7601
4)	1.9273	1.9782
5)	.6909	.1994
6)	10.1273	9.0935
7)	1.8909	1.6168
8)	1.6455	1.7072
9)	1.9636	1.9283
10)	1.9091	1.8972
11)	1.9364	1.9128
12)	1.8182	1.9159

The eight subsets with the highest total hit rate (359 out of total 459 subjects read) identified predictor variables 4, 7, 8, 9, and 10 as those receiving the most cross-validated hits. Performance evaluation of the eight best models identified via ZCLASS (Morris & Meshbane, 1995) was run to compare the cross-validated classification accuracy of a particular model with what would be expected by chance alone. Toward this intent, chance is defined in two ways: (1) proportional chance = expected hits for one of the groups divided by the sum of the expected hits for each group and (2) maximum chance criterion = the number of cases in the largest group (Morris & Meshbane, 1995). The maximum chance criterion is more appropriate when group sizes are unequal, as they are in this case.

Output from ZCLASS (Morris & Meshbane, 1995) indicates that the models identified yielded cross-validated classification hit rates significantly higher than would be expected by the maximum chance criterion. The performance of the eight best models identified through CLASSVSP (Morris & Meshbane, 1995) represents a 35% improvement over chance expectations ( $z = 4.20, p < .05$ ). The results are of statistical and practical significance.

Infant birth weight was dichotomized secondary to the inadequate number of specific race cases to warrant a second dummy variable (Table 3). Only two groups had over eight cases, so one dummy variable was considered sufficient. Additionally, a median split (3175 grams) of birth weight was used rather than the standard 2500 gram low birth weight criterion used in the health literature (US DHHS, 2000). This decision is based on the fact that there were only 36 cases with

birth weight less than or equal to 2500 grams. The CLASSVSP (Morris & Meshbane, 1995) predictive discriminant analysis program misclassified all 36 low birth weight cases as normal birth weight.

Values less than 3175 grams were below average (new value = 1) and values 3175 grams and above were above average (new value = 2). CLASSVSP (Morris & Meshbane, 1995) was run with dichotomized birth weight as the criterion, to identify the 10 predictor variable subsets yielding the highest cross-validated classification accuracy. The key to predictor variables is unchanged from those identified in Table 5, with one exception, predictor 1 = zip code indicator (low birth rate zip code versus high birth rate zip code). Table 7 contains the predictive all-class subsets results for the twelve predictor variables and the criterion group means for birth weight.



Table 7

Discriminant Analysis: Birth Weight

Predictor	Group One Means (N = 199)	Group Two Means (N = 232)
1)	1.17940	1.7026
2)	9.7839	10.2759
3)	17.7186	17.8578
4)	1.9648	1.9655
5)	.3367	.3147
6)	8.7789	9.8534
7)	1.6985	1.6767
8)	1.7437	1.6466
9)	1.9196	1.9526
10)	1.9296	1.8750
11)	1.9246	1.9138
12)	1.8995	1.8836

The 10 subsets with the highest total hit rate (267 out of 894 subjects read) identified predictor variables 1, 2, 3, 6, 8, 9, and 10 as those receiving the most cross-validated hits. ZCLASS (Morris & Meshbane, 1995) was run to determine the models identified by their CLASSVSP performance level. The models identified did perform significantly better than chance expectations. Performance ranged from 262 to 267 correct classifications for the 10 best models, representing

an improvement over proportional chance expectations of 20% ( $z = 4.17$ ,  $p < .05$ ), and an improvement over maximum chance expectations of 14% ( $z = 2.71$ ,  $p < .05$ ). Table 8 contains the ZCLASS output for the birth weight criterion.

#### Pearson Correlation Matrix

Pearson correlations were run between the criterion variables of birth weight in grams and birth rate zip code and the predictor variables of mother's education, mother's age, whether mother smokes, number of cigarettes smoked, number of prenatal visits, and the six dummy variables (Black, Hispanic, Haitian, Mexican, Puerto, Csamer). To assess practical significance of the Pearson correlation coefficients, criteria of .1, .3 and .5 were used to respectively assess small, medium and large effect sizes (Cohen, 1992).

Of the 12 predictors, the six that correlated the highest with birth rate zip code were the criterion variable weight in grams ( $r = -.142$ ), tobacco use ( $r = .140$ ), average number of cigarettes ( $r = -.106$ ), number of prenatal visits ( $r = -.116$ ), Black ( $r = -.249$ ) and Central or South American Hispanic ( $r = .116$ ). The 3 predictors that correlated the highest with birth weight were the criterion variable zip code ( $r = -.142$ ), number of prenatal visits ( $r = .175$ ) and Mexican ( $r = -.127$ ). Additionally, strong positive correlations exist between race as Black and Hispanic ( $r = .541$ ), Mexican ( $r = .325$ ), Puerto Rican ( $r = .262$ ), and Central or South American Hispanic ( $r = .223$ ). Table 8 contains the intercorrelation matrix. This table shows correlations between each pair of predictors as well as between each predictor and the criterions. The significance levels are 2-tailed, which are more

appropriate for the behavioral sciences because both positive and negative linear correlations are acknowledged as significant.

Table 8

Intercorrelation Matrix

Predictor Variable	Zip	Weight in Grams	Mother's Education	Black
ZIP				
Pearson r	1.00	-.142**	-.077	-.249
Sig		.002	.104	.000
WEIGHTGR				
Pearson r	-.142**	1.00	.074	-.076
Sig	.002		.16	.104
MOEDUC				
Pearson r	-.077	.074	1.00	.279**
Sig	.104	.116		.000
MOAGE				
Pearson r	-.053	.066	.239**	-.040
Sig	.255	.157	.000	.387



Table 8 (Continued)

Intercorrelation Matrix

Predictor Variable	Zip	Weight in Grams	Mother's Education	Black
TBACCOU				
Pearson r	.140**	-.034	-.036	.023
Sig	.003	.470	.452	.620
AVG_CIG				
Pearson r	-.106	.014	.024	-.038
Sig	.024	.766	.616	.415
PREVIST				
Pearson r	-.116*	.175**	.218**	.028
Sig	.015	.000	.000	.551
BLACK				
Pearson r	-.249**	-.076	.279**	1.00
Sig	.000	.104	.000	

Table 8 (Continued)

Intercorrelation Matrix

Predictor Variable	Zip	Weight in Grams	Mother's Education	Black
HISPANIC				
Pearson r	.052	-.106	.425**	.541**
Sig	.263	.023	.000	.000
MEXICAN				
Pearson r	-.018	-.127**	.269**	.325**
Sig	.695	.007	.000	.000
PUERTO				
Pearson r	-.031	-.022	.010	.262**
Sig	.510	.632	.840	.000
CSAMER				
Pearson r	.116*	.005	.403**	.223**
Sig	.013	.908	.000	.000

\*\* Correlation significant at the 0.01 level; \* Correlation significant at the 0.05 level (2-tailed)

## Conclusions

Adolescent women who lived in Palm Beach County's four highest birth rate zip code areas, were two to three times more likely to become pregnant and to bear a child in 1999 (Cornerstone, 2001a). This investigation furthers our understanding of teenage pregnancy in Palm Beach County by demonstrating that childbearing youth within these hot spot areas were more likely to be Black, Mexican, Central or South American Hispanic, have had fewer prenatal visits, fewer years of education and have an infant be of less than average birth weight.

These teens were significantly more likely to be of mixed minority race and live in disadvantaged environments. These findings are congruent with an investigation of zip code and adolescent birth data in California (Kirby, Coyle, & Gould, 2001). Kirby et al., (2001) found that low levels of education and higher rates of unemployment, especially in some racial or ethnic groups may have a large impact upon birthrates among young teenagers.

The individual factors of disadvantage identified in this investigation of less education, less prenatal health care, smoking, and race/ethnicity are inextricably linked in one unfortunate outcome; marginalized adolescent women in Palm Beach County bear infants of less than average birth weight at rates significantly higher than average. Awareness of the personal and behavioral factors associated with high birth rate zip code areas, teenage childbearing and less than average infant birth weight, facilitate development of nursing interventions to connect at-risk adolescents with quality health promoting services prior to, during,

and after pregnancy. Promoting and supporting healthy lifestyle behaviors in our future generation could interrupt the intergenerational cycle of social disorganization and disadvantage that has been historically endemic to adolescent pregnancy in Palm Beach County. Attaining positive outcomes for the client through health promoting nursing interventions can result in a positive health experience throughout the life span for at-risk adolescents.



## Chapter 5

### Summary, Discussion, Conclusions, Implications and Recommendations

Adolescent sexuality, pregnancy and childbearing are some of the most divisive medical and social issues in American life. They are at the forefront of the public policy debate involving government agencies, private organizations and countless programs to quantify, explain and hopefully reduce the high number of adolescent pregnancies and births in the United States. Yet, despite declining national birth rates the US continues to have the highest adolescent pregnancy and childbearing rates of all industrialized nations (Alan Guttmacher Institute, 1998; Coley & Chase-Lansdale, 1998; Henshaw, 1996; National Campaign to Prevent Teenage Pregnancy, 2000).

Of particular concern are the alarmingly high rates of pregnancy and births among certain segments of our population specifically minority teens. Adolescent women in the four highest birth rate zip code areas of Palm Beach County affirm the racial disparity, so often linked with poverty, that pervade adolescent pregnancy and childbearing. For these women the multiple manifestations of poverty, including poverty itself, constrain resources that could ameliorate their environmentally associated risks and limit future life options.

Many communities, including Palm Beach County, are concerned about alarming rates of pregnancy and births among certain adolescent groups. However,

initiatives to curtail pregnancy and childbearing in these high-risk populations will be ineffective if approaches do not include factors that reflect the diversity of each social context (Pender, Murdaugh, & Parsons, 2002). Designing nursing interventions that integrate the larger social context with specific at-risk behaviors could substantially reduce childbearing among young adolescents. Promoting health-enriching life style options, with knowledge of and respect for at-risk minority cultures, is nursing care that is culturally competent.

#### Locating the Context

Youth who exhibit unabated problems with unplanned pregnancies have multiple risks that are relative to their social and demographic parameters. In Palm Beach County, as in the rest of the nation, the poorest and most disadvantaged youth experience the highest rates of pregnancy and childbearing (Cornerstone, 2001a; Florida Department of Health, 1999a; Ventura, Martin, Curtin, & Menacker, 2001). The dismal legacy of pregnancy intervention efforts with minority groups may in part reflect a lack of diversity in content and presentation style.

Today's nursing intervention efforts cannot afford to neglect group differences or lack cultural sensitivity. Nursing health promotion programs that are responsive to teenage pregnancy and childbearing must include the environmental and interpersonal contexts of youth at greatest risk for negative outcomes (Schinke, 1998). Eliminating the health and racial inequalities endemic to the

culturally relevant communication patterns, family relationship dynamics, time orientation and access to and acceptance of health promotion programs (Bushy, 1999; Keller, 1997). Each of these areas must be strategically developed to meet the specific needs of local youth and the identified goals of the community. Culturally relevant nursing interventions can have an increased impact if designed with the characteristics detailed in Table 9.

Table 9

Culturally Relevant Interventions Strategies for Vulnerable Populations

Characteristic	Strategy
Communication Patterns	<p>Assess primary language spoken, knowledge of English, literacy level</p> <p>Use same language as target culture</p> <p>Understand cultural meaning and expectations of health</p> <p>Use culturally specific media to deliver messages</p> <p>Involve community in developmental activities</p>
Family Relationships	<p>Understand role family, extended, and nontraditional</p> <p>Involve family in health promotion activities</p> <p>Assess religion and its role in family and incorporate church network</p>
Time Orientation	<p>Explore time orientation and meaning of “clock” time to target culture</p> <p>Tailor message to dominant time orientation</p>
Access to and acceptance of health promotion programs	<p>Assess barriers to and environmental resources of health promotion programs</p> <p>Use existing community sites to deliver programs, such as churches schools</p> <p>Incorporate health promotion activities into ongoing community activities</p>



Essential Characteristics to Consider. Communication patterns and styles are the most evident differences among the diverse populations nurses and other health care providers serve. Verbal and nonverbal communication, word meanings and body language vary across cultures and are key features of the health care nurses provide (Pender et al., 2002). Since nursing health promotion programs are most effective in the primary language of the population served, members of the targeted population should be involved not only in program development but also as the voice of intervention implementation. Enlisting culturally specific television, radio, internet and print media will facilitate the delivery of health messages (Pender, et al., 2002).

The youth who live in high birth rate zip code areas of Palm Beach County are Black, Mexican, Central or South American Hispanic. The customs, language and experiences would be very different depending on the culture in which the youth is immersed. For this reason a cultural representative is an essential member of the adolescent pregnancy intervention team for their “dual interpreter” role. These cultural representatives, as team members, interpret the health wellness message to the recipients and also convey insight into characteristics and needs of the population being served to nursing and other health care providers.

Family relationships and social networks vary tremendously by culture especially within a context of poverty. Immersion in the circumstances of poverty with prior school failure, restricted labor and educational opportunities, premature adult mortality, high infant mortality and limited access to services exacts a high

physical price on minority groups (Geronimus, 1992; 1999). Impoverished, minority teens demonstrate alarming rates of adolescent pregnancy and childbearing (Cornerstone, 2001a; Ventura, Martin, Curtin, & Menacker, 2001). One explanation offered for these alarming rates is early childbearing is an intentional coping mechanism to prolonged immersion in severe socioeconomic disadvantage.

The health of poor Black women has been shown to deteriorate significantly in early adulthood during their mid 20's, with poorer birth outcomes evident as they age (Geronimus, 1992). Social epidemiologists have found that impoverished Black women demonstrate overall poorer health as a manifestation of their social inequality, its associated health insults and their decreased opportunities to utilize health services (Geronimus, 1997; 2000). As such, impoverished minority women bear children early in life before their health begins to deteriorate as a representation of social processes.

Early fertility demonstrated in minority teens, especially poor Black adolescents, is argued as an attempt by disadvantaged teens to embrace their culture's concept of family value. Minority teens bring their children into the world when they are young enough to work hard and provide for their child's well-being with the assistance of kinship networks. The social networks endemic to impoverished populations ameliorate the extremely adverse environmental and social circumstances that constrain and qualitatively alter the routes available for goal achievement (Geronimus, 1992; 1999). Early childbearing and the

development of multi-generational social or kinship networks help to pool risk among poor families and provide social insurance against common risks. The risks common to poor minority groups are severe unpredictability of wages, employment and welfare benefits, homelessness, hunger, early adult disability, death or incarceration (Geronimus, 1999).

Behavior patterns that are outside the statistical norms that may perplex socially and economically advantaged populations are actually normal in disadvantaged populations. These behavior patterns develop as patterned coping strategies in response to the social inequality inherent in socioeconomic variation. Generalizing middle class values to the poor leads to erroneous interpretations of the motivation of unmarried, sexually active teens who are poor and the opportunities and resources dependably available to them for realizing more socially approved goals other than early childbearing (Geronimus, 1999).

A poor minority adolescent woman's, especially a Black woman's, best chance of long-term labor force engagement are when her children's pre-school years coincide with her years of peak access to social and practical support provided by healthy kinship networks (Geronimus, 1999). Postponing childbearing decreases the chance that their children's father will survive through much of their childhood (Geronimus, Bound, & Waidmann, 1999) and that her young children will compete with ailing elders for her energies.

The cultural context pregnant and childbearing adolescents are immersed in provides invaluable insights for the providers of health care. As nurses we may



assume that childbearing during adolescence is a stressful or undesired event. This is not a universal assumption, especially in minority groups as were studied in this investigation. Insight and sensitivity to the dynamics that impact adolescent sexuality, pregnancy and childbearing in diverse minority groups allow nurses to develop culturally competent health promoting interventions that support the adolescent's decision-making process and nurture her resourcefulness as a young women.

Time orientation refers to how different cultures perceive time. Three major time orientations are past, present and future (Kluckhohn & Strodtbeck, 1961). A past orientation, observed in traditional Asian and American Indian groups values tradition, and deceased family members are considered part of the extended family. Future oriented persons emphasize planning for time extending forward from the present often delaying present gratification (Pender et al., 2002). Health promotion activities may appeal to future oriented individuals who want to be healthy in their retirement. However, they may be so busy working and planning for the future that health and wellness are not a priority at the present.

Present orientation is common to individuals living in poverty as the focus is on surviving today with little hope or confidence in tomorrow. Persons who are oriented to the present have difficulty changing behaviors because the activity of the moment takes precedence (Pender et al., 2002). This is a critical awareness for nurses who work with disadvantaged populations and are challenged to deliver services to groups that may seem initially resistant or noncompliant.



Knowledge of an individual's time orientation and adherence to clock time could diminish misunderstanding of response to appointments, attendance at screening programs and health promoting services.

Vulnerable populations have tremendous difficulty accessing care and accepting therapeutic interventions due to distance, cost, transportation, language and perceived lack of acceptance by health care providers (Keller & Stevens, 1997). Culturally sensitive approaches based on individual and family values enhance acceptance to health promoting interventions. Conducting focus groups with members of targeted communities to learn culturally relevant information on which to base interventions has been a very successful strategy (Cornerstone, 2001b; Murdaugh, Russel, & Sowell, 2000)

Community problems, priorities and resources need to be identified and resources allocated to promote successful health promotion efforts. Churches and other community sites should be utilized whenever possible for ease of access as well as familiarity of environment (Pender et al., 2001). Nursing health promotion programs that enhance the quality of individual lives in the community facilitate competent communities in which members can identify and solve their own health and wellness issues.

#### Recommendations for Policy, Practice and Research

The primary recommendation from this study for health policy is ongoing with implementation of the Healthy People 2010 initiative (US DHHS, 2000). Healthy People 2010 calls attention to the socioeconomic inequalities in health

and for the first time boldly calls for the elimination, not simply the reduction, of socioeconomic and racial/ethnic health disparities. Locally, the Palm Beach County Health Department, under the direction of Jean Malecki, M.D. is actively engaged in not only exploring racial disparities but also implementing strategies to close the racial health gap in Palm Beach County's residents (Cornerstone, 2001a).

Disparate rates of adolescent pregnancy and childbearing exist in certain minority groups and geographic areas of Palm Beach County (Cornerstone, 2001a). This investigation furthers our understanding of the interactive effect of race, poverty and locality in health differentials. Pregnant and childbearing adolescents who live in the highest birth rate areas of Palm Beach County have risk factors that, linked with their unfavorable socioeconomic position, are a potent social patterning force of health and disease.

Specific interventions self-identified by teens in Palm Beach County to avoid early sexual activity, unwanted pregnancy and disease were:

1. Sexuality education beginning at an early age and built through developmentally appropriate programs at regular intervals. More than providing information, these programs must build skills, understanding and the intention to use them.
2. Access to reproductive health services that are provided in an atmosphere of support and confidentiality. Youth need knowledge of these services and their right to use them.

3. Meaningful activities to occupy them during out-of-school time. They also need opportunities to build the competence and direction to secure a productive future.
4. Most of all, youth need to be able to talk to adults, if possible their own parents, about these issues in open, honest discussions that give them a sense of empowerment and support for their responsible actions (Cornerstone, 2001b, p. 27) .

Knowledge of what health promotion activities teens in Palm Beach County articulate they need must be combined with the identified goals of the target community. Nurses can organize and participate in representative planning groups to define the problem(s) the communities want to solve and the specific populations they will serve. Effective nursing health promotion program design and implementation necessitates inclusion of three constants of community efforts to decrease adolescent pregnancy and childbearing: (1) provide for teens who are already sexually active, (2) involve adults as educators and advocates and (3) implement comprehensive approaches (Cornerstone, 2001b). Comprehensive programs are multi-component based and address the complex and interrelated causes of adolescent pregnancy.

Impoverished members of our underserved minority populations who live in decayed, poorly maintained environments, restricted in access to resources and services, especially health care services must be the primary focus of nursing's health promotion policies and initiatives. Eliminating socioeconomic and

racial/ethnic health disparities necessitates expanding and diversifying existing programs and services to meet the needs of our at-risk adolescents in the communities where they reside.

Targeting and tailoring appropriate nursing strategies and health services to vulnerable minority groups and expanding access requires time, energy and financial resources. Proactively enlisting the support of Palm Beach County's elected officials who represent the hot spot adolescent childbearing areas at the state and federal levels is a critical liaison for nurses. These individuals link adolescent women in Palm Beach County's at-risk communities with governmental resources available to transform these communities. Health promotion resources are varied in nature and form but all can be utilized to mount successful nursing interventions to break the bond between socioeconomic position and health in challenging contexts. Many local agencies and educational institutions are successfully navigating the intricacies of governmental bureaucracy to secure organizational funds for underserved members of the Palm Beach County community.

The Maternal Child and Family Alliance of Palm Beach County, Inc. (MCFHA) administers a network of services for all prenatal and postnatal women/teens and their families in Palm Beach County (Children's Service Council, 2001a). These services promote the healthy birth and positive development of infants and young children. Available services include a continuum of support for pregnant women/teens to increase access to prenatal



care and promote positive birth outcomes. Most recently, the MCHFA received a \$3.5 million grant from the Department of Health and Human Services for a four-year community outreach and education initiative for at-risk women in Palm Beach County (Children's Service Council, 2001b).

The College of Nursing at Florida Atlantic University (FAU) has a community project that provides services to impoverished, historically underserved minority groups in Palm Beach County. Most of the health care is provided by nurses in both traditional and expanded practitioner roles. The FAU College of Nursing recently obtained federal funding to expand their women's health care services to refugee women. A collaborative effort between these two organizations would be mutually beneficial to the nursing community, the Maternal Child and Family Health Alliance and the women who need quality health care services the most and have the most difficulty accessing them.

Specific nursing practice suggestions include the provision of public/community based health promotion and prevention programs in both the traditional and advanced practice nursing roles. There is a critical common denominator to contemporary health promotion programs that nurses have long included while practicing within a public health nursing model. Successful transformation of vulnerable communities occurs with the delivery of nursing and health care interventions as an outreach into and within the underserved community.

The Boston Codman Square Community Partnership for Health Promotion adopted a health promotion strategy that directly addressed the social, environmental and behavioral consequences of poverty that affect the health of that population (Schlaff, 1991). The program used community residents trained as lay health workers to deliver home-based health services and to create partnerships, communication networks and linkages to facilitate reorientation and reorganization of the community to better address their own health needs (Pender, 1996). In this poor community health outcomes were improved and community self-sufficiency was promoted.

Another innovative community nursing effort in Sheffield, England developed and delivered outreach health services that targeted impoverished, at-risk adolescents in a well known neglected geographic area (Plant, Mcfeely, Flynn, 1998). A collaborative primary health team effort was implemented to meet the needs of these vulnerable youth for accessible adolescent-focused health care. Health professionals and, in particular nurses were sought for their expertise, clinical knowledge and skills. Nurses brought a unique perspective to the team that helped these young people identify and face their challenging health issues. Initial findings of the project appear positive. Nurses, as part of the collaborative effort, were proactively meeting the health education and support needs of teenagers in their own community environment with convenient teen hours, accessible, caring staff, relevant teen topics and population-specific affordable services.

Pregnant adolescents from predominantly minority and impoverished backgrounds in Los Angeles participated in a community-based early nursing intervention program to improve social and health outcomes for mother and baby (Koniak-Griffin, Anderson, Verzemnieks, & Brecht, 2000). Intensive home visitation by public health nurses and preparation for motherhood classes were provided to adolescents participating in the early nursing intervention program. Initial findings demonstrated improved perinatal outcomes for vulnerable adolescent mothers with public health nursing care. With more intense and sustained intervention the researchers proposed that maternal educational achievement and infant health may also improve.

Another vital nursing practice area of adolescent health promotion is in the area of smoking cessation (Donovan, 2000). Smoking continues to be a critical health problem with the increasing number of young women who are smoking of particular concern (Seguire & Chalmers, 2000). Smoking is a modifiable risk factor for preterm and low birth weight infants, two of the Maternal, Infant and Child Health Targets of Health People 2010 initiative (US DHHS, 2000). Nursing strategies for adolescent smoking cessation have included peer leadership, nicotine patch therapy, peer support, computer instruction and one-on-one counseling with a nurse practitioner (Donovan, 2000). While many cessation programs do not demonstrate remarkable success with this addictive behavior, nurses must continue to develop or identify smoking cessation programs

that meet the needs of diverse adolescent groups and are effective in helping them to quit smoking.

Nursing's long-standing patient advocacy role, the intimate component of our patient relationships and our educational preparation position us in an ideal situation to identify risk factors and design programs to minimize the social and emotional cost of adolescent pregnancy and childbearing (Perez, Sanchez de San Lorenzo & Perez, 1997). Nurses are uniquely qualified to assume a leadership role in implementing health promotion strategies in an atmosphere of support and understanding for at-risk minority adolescents.

Recommendations for continued research include analyses that inform efforts to eliminate or reduce impoverished minority group disadvantage and health disparities. Research efforts should include benchmarking (DeLise & Leasure, 2001) to evaluate nursing's practice intervention processes and patient outcomes for changes. In addition, increased research of variations unique to location as a poor minority group are essential to practitioners hoping to eliminate racial/ethnic and socioeconomic disparities in health.

Development of contextual and dynamic understandings of the role of culture in health facilitates awareness of how dominant culture systems maintain social inequality (Geronimus, 2000). From a race-based perspective, socially and economically advantaged culture systems perpetuate poverty to maintain a core American myth that some people are more equal than others. One interpretation of this myth is that the populace is divided into those who are the responsible,



productive members of civil society, deserving of its full benefits, and the “others” who are a threat to civil society and as such, must be marginalized, segregated and even policed if necessary (Brodkin, 1998).

This race-based culture of exclusivity has taxed the health of poor Black, Hispanic and immigrant populations in Palm Beach County for generations. Real threats to public health now exist from historical processes that created and sustain the long-term ghettoization of our poor. This investigation has identified important interactions of race/ethnicity, poverty and locality on the health of impoverished pregnant and childbearing adolescents in Palm Beach County.

Pregnancy intervention programs must be population-specific to enhance potential successes with intensive efforts directed toward high-risk youth. This investigation demonstrated that youth who live in high birth rate zip code areas of Palm Beach County are likely to be impoverished, Black, Mexican, Central or South American Hispanic, smoke, have lower birth weight infants, fewer prenatal visits, less years of education and bear infants at two to three times the state and national averages. The childbearing adolescents in high birth rate zip code areas of Palm Beach County live in the margins of a society that has institutionalized social inequality, privileging those who are economically and socially advantaged.

Fortunately contemporary awareness has evolved regarding the significance socioeconomic variation has had for the health of those relegated to society’s margins. More importantly a national mandate exists to articulate the needs and perspectives of our underserved populations and to eliminate the health disparities that arise from their disadvantaged contexts. Examination and

incorporation of the influence intergroup dynamics, coalitions and tensions have on the health of impoverished racial and ethnic groups facilitates development of nursing interventions which include collaboration in programs and policies to improve the health of impoverished Americans. These programs and policies can offer all members of our society the opportunity to succeed.

## References

- Alan Guttmacher Institute. (1998). Facts in brief: Teen sex and pregnancy. [On-line].  
[http://www.agi-usa.org/pubs/fb\\_teen\\_sex.html](http://www.agi-usa.org/pubs/fb_teen_sex.html).
- Alan Guttmacher Institute. (1999). Teenage pregnancy: Overall trends and state-by-state information. New York: Author.
- Anonymous. (2000). Teen pregnancy prevention: Breaking the cycle for mothers and children. Chronic Disease Notes & Reports, 13(2), 5-7.
- Aquilino, M., & Bragadottir, H. (2000). Adolescent pregnancy: Teen perspectives on prevention. MCN: American Journal of Maternal Child Nursing, 25(4), 192-197.
- Benoit, M. (1997). The role of psychological factors on teenagers who become parents out-of-wedlock. Children and Youth Services Review, 19(5/6), 401-413.
- Brodkin, K. (1998). How Jews became white folk and what that says about race in America. New Brunswick, NJ: Rutgers University Press.
- Brooks-Gunn, J., & Chase-Lansdale, P. (1995). Adolescent parenthood. In M. Bronstein (Ed.), Handbook of parenting, Vol 3: Status and social conditions of parenting (pp. 113-149). Hillsdale, NJ: Lawrence Erlbaum.
- Bushy, A. (1999). Resiliency and social support. In J.G. Sebastian, & A. Bushy (Eds.), Special populations in the community: Advances in reducing health disparities (pp. 189-195). Frederick, MD: Aspen Publishers.

- Chavez, M., Ananth, C., & Vintzileos, A. (2001). Risk factors for small-for-gestational age births between black and white adolescents in the United States. American Journal of Obstetrics and Gynecology, 184(1), 182.
- Children's Service Council. (2001a). Directory of funded programs 2000 - 2001. [Online]. <http://www.cscpb.org>.
- Children's Service Council. (2001b). For the children,13(5) [Newsletter]. West Palm Beach, FL: Author
- Chinn, P., & Kramer, M. (1995). Theory and nursing: A systematic approach (4<sup>th</sup> ed.). St. Louis, MO: Mosby.
- Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2<sup>nd</sup> ed). Hillsdale, NJ: Erlbaum.
- Cohen, J. (1992). A power primer. Psychological Bulletin, 112(1), 155-159.
- Coley, R., & Chase-Lansdale, P. (1998). Adolescent pregnancy and parenthood: Recent evidence and future directions. American Psychologist, 53(2), 152-166.
- Corcoran, J. (1999). Ecological factors associated with adolescent pregnancy: A review of the literature. Adolescence, 34(135), 603-619.
- Cornerstone Consulting Group. (2001a). A report for The Palm Beach County Health Department and governor's council for community health partnerships, Inc. Houston, TX: Author.
- Cornerstone Consulting Group. (2001b). Program approaches in teen pregnancy prevention: Best practices and effective and promising programs. Houston: TX: Author.



- Cowles, M., & Davis, C. (1982). On the origins of the .05 significance level of statistical significance. American Psychologist, 37, 553-558.
- David, B. (1996). Nursing practice in a contemporary health care corporation. Masters Abstracts International, 3502, #138228.
- DeLise, D., & Leasure, A. (2001). Benchmarking: Measuring outcomes of evidence-based practice. [On-line]. <http://www.nursing.com>.
- DiFranza, J., & Lew, R. (1995). Effect of maternal cigarette smoking on pregnancy complications and sudden infant death syndromes. Journal of Family Practice, 40, 385-394.
- Donovan, K. (2000). Smoking cessation programs for adolescents. The Journal of School Nursing, 16(4), 36-43.
- Erdfelder, P., Faul, A., & Buchner, J. (1996). G\*Power: A general power analysis program. Behavior Research Methods, Instruments, & Computers, 28, 1-11.
- Estaugh, V., & Wheatley, J. (1990). Family planning and family well-being, Occasional paper No. 12, Family Policy Studies Centre and the Family Planning Association.
- Evans, J. (1996). Straightforward statistics for the behavioral sciences. Pacific Grove, CA: Brooks/Cole Publishing.
- Florida Department of Health, Public Health Statistics Section. (2000). Florida vital statistics code manual 2000. Jacksonville, FL: Author.
- Florida Department of Health, Office of Planning, Evaluation and Data Analysis. (1999a). Florida vital statistics report annual report, 1999. [On-line]. [http://www.doh.state.fl.us/planning\\_eval/vital\\_statistics/99vitals/Births.pdf](http://www.doh.state.fl.us/planning_eval/vital_statistics/99vitals/Births.pdf).

- Florida Department of Health, Office of Planning, Evaluation and Data Analysis. (1999b). Births by age of mother, 15-19. [On-line].  
[http://www.doh.state.fl.us/planning\\_eval/phstats/phrpt/NOndeath/births15-19.html](http://www.doh.state.fl.us/planning_eval/phstats/phrpt/NOndeath/births15-19.html).
- Franklin, C., & Corcoran, J. (2000). Preventing adolescent pregnancy: A review of programs and practices. Social Work, 45(1), 40-51.
- Franklin, C., Grant, D., Corcoran, J., Miller, P., & Bultman, L. (1997). Effectiveness of prevention programs for adolescent pregnancy: A meta-analysis. Journal of Marriage and the Family, 59(August), 551-567.
- Foster, H., Bond, T., Ivery, D., Treasure, A., Smith, D., Sarma, R., Engram, A., & Cathcart, S. (1999). Teen pregnancy-problems and approaches: Panel presentations. American Journal of Obstetrics and Gynecology, 18(1S), 32S-36S.
- Garb, J. (1996). Understanding medical research: A practitioner's guide. New York: Little, Brown and Company.
- Gardner, J. (1997). Fetal alcohol syndrome-Recognition and intervention. MCN: American Journal of Maternal/Child Nursing, 22, 318-322.
- G\*Power. International MS-DOS version. (updated May 15, 1998). Germany: University of Dusseldorf. Retrieved May 19, 2001 from the World Wide Web: <http://www.psych.uni.dusseldorf.de/aap/projects/gpower/index.html>.
- Gebbie, K., Wakefield, M., & Kerfoot, K. (2000). Nursing and health policy. Journal of Nursing Scholarship, 32(3), 307-315.

- Health and Human Services Planning Association, Inc. (February, 1998). Introduction to social indicators overview, Palm Beach County. West Palm Beach, FL:Author.
- Henshaw, S. (1996). Teenage pregnancy statistics. New York: Alan Guttmacher Institute.
- Hoffman, S. D., Foster, E. M., & Furstenberg, F. F., Jr. (1993). Reevaluating the costs of teenage childbearing. Demography, 30, 1-13.
- Hotz, V. J., McElroy, S. W., & Sanders, S. G. (1997). The costs and consequences of teenage childbearing for mothers In R. Maynard (Ed.), Kids having kids (pp. 55-94). Washington, DC: Urban Institute Press.
- Kachigan, S. (1991). Multivariate statistical analysis: A conceptual introduction (2nd ed). NY: Radius Press.
- Keller, C., & Stevens, K. (1997). Cultural considerations in promoting wellness. Journal of Cardiovascular Nursing, 11(3), 15-25.
- Kirby, D., Brener, N., Brown, N., Peterfreund, N., Hillard, P., & Harrist, R. (1999). The impact of condom distribution in Seattle schools on sexual behavior and condom use. American Journal of Public Health, 89, 182-187.
- Kirby, D., Coyle, K., Gould, J., (2001). Manifestations of poverty and birthrates among young teenagers in California zip code areas. Family Planning Perspectives, 33(2), 63-69.
- Koniak-Griffin, D., Anderson, N., Verzemnieks, I., & Brecht, M. (2000). A public health nursing early intervention program for adolescent mothers: Outcomes from pregnancy through 6 weeks postpartum. Nursing Research, 49(3), 130-138.

- Kluckhorn, E., & Strodtbeck, F. (1961). Variation in value orientations. Westport, CT: Glenwood Press.
- Kushman, J., Sieber, C., & Heariold-Kinney, P. (2000). This isn't the place for me: School dropout. In D. Capuzzi & D. Gross (Eds.), Youth at risk (3<sup>rd</sup> ed., pp. 471-507). Alexandria, VA: American Counseling Association
- Lantz, P., House, J., Lepowski, J., Williams, D., Mero, R., & Chen, J. (1998). Socioeconomic factors, health behaviors, and mortality: Results from a nationally representative prospective study of U.S. adults. JAMA, 279, 1703-1708.
- Lynch, J., Kaplan, G., & Shema, S. (1997). Cumulative impact of sustained economic hardship on physical, cognitive, psychological, and social functioning. New England Journal of Medicine, 337, 1889-1895.
- Mancini, M., Barbosa, N., Banwart, D., Silveira, S., Guerpelli, J., & Leone, C. (2000). Intraventricular hemorrhage in very low birth weight infants; Associated risk factors and outcome in the neonatal period. [On-line]. <http://www.medscape.com/server-java/>.
- Marmont, M., Kogevinas, M., & Elston, M. (1987). Social/economic status and disease. Annual Review of Public Health, 8, 111-135.
- Maynard, R. (1997). The costs of adolescent childbearing. In R. Maynard (Ed.), Kids having kids (pp. 285-327). Washington, DC: Urban Institute Press.
- McElroy, S., & Moore, K. (1997). Trends over time in teenage pregnancy and childbearing: The critical changes In R. Maynard (Ed.), Kids having kids (pp. 23-53). Washington, DC: Urban Institute Press.



- Mitchell, C. (1997). Culturally relevant intervention with minority adolescents: Before the beginning. In S. Clancy Dollinger, & L. F. DiLalla (Eds.), Assessment and intervention issues across the life span (pp. 219-238). Mahwah, NJ: Erlbaum.
- Mitchell-DiCenso, A., Thomas, B., Devlin, M., Goldsmith, C., Willan, A., Singer, J., Marks, S., Watters, D., & Hewson, S. (1997). Evaluation of an educational program to prevent adolescent pregnancy. Health Education & Behavior, 24(3), 300-312.
- Moore, M. (2000). Adolescent pregnancy rates in three European countries: Lessons to be learned? JOGNN: Journal of Obstetric, Gynecologic, and Neonatal Nursing, 29(4), 355-362.
- Moore, K., Morrison, D., Blumenthal, C., Daly, M., & Bennett, R. (January 1993). Data on teenage childbearing in the United States. Washington, DC: Child Trends, Inc.
- Moore, K., Morrison, D., & Greene, A. (1997). Effects on the children born to adolescent mothers. In R. Maynard (Ed.), Kids having kids (pp. 145-180). Washington, DC: Urban Institute Press.
- Moore, K., Myers, D., Morrison, D., Nord, C., Brown, B., & Edmonston, B. (1993). Age at first childbirth and later poverty. Journal of Research on Adolescence, 3, 393-422.
- Morris, J., & Meshbane, A. (1995). Selecting predictor variables in two-group classification problems. Educational and Psychological Measurement, 55, 438-441.
- Mortenson, T.G. (1997). Postsecondary education opportunity: The Mortenson research seminar on public policy analysis of opportunity for postsecondary education, 1997.

Postsecondary education opportunity, 55-66. [ERIC Document Production Service No. ED416754].

Murcott, A. (1980). The social construction of teenage pregnancy: A problem in the ideologies of childhood and reproduction. Sociology of Health and Illness, 2(1), 1-23.

Murdaugh, C., Russel, R., & Sowell, R. (2000). Using focus groups to develop a culturally sensitive videotape interaction for HIV positive women. Journal of Advanced Nursing, 32, 1507-1513.

National Campaign to Prevent Teen Pregnancy. (1997). Whatever happened to childhood? The problem of teen pregnancy in the United States. Washington, DC: Child Trends.

National Campaign to Prevent Teen Pregnancy. (1998). While the adults are arguing, the teens are getting pregnant: Overcoming Conflict in Teen Pregnancy Prevention. Washington, DC: Child Trends.

National Campaign to Prevent Teen Pregnancy. (2000). Facts and Stats, 2000. Washington, DC: Author.

National Center for Education Statistics. (1995). Statistical analysis report: Approaching kindergarten: A look at preschoolers in the United States. [On-line].  
<http://nces.ed.gov/pub95/95280.html>.

National Vital Statistics Report. (2000). Volume 48(3), 78-79. National Center for Health Statistics. Washington, DC: U.S. Government Printing Office.

- Nunes, A., Melo, F., Silva, J., Costa, A., Bispo, M., Palminha, J. (1998). Importance of J. Brazy's neurobiological index. Prediction of the number and severity of complications in very low birth weight infants. [On-line].  
<http://www.medscape.com/server-java/>.
- Palta, M., Sadek-Badawi, M., Evans, M., Weinstein, M., & McGuinness, G. (2000). Functional assessment of a multicenter very low-birth-weight cohort at age 5 years. Newborn Lung Project. Archives of Pediatric Adolescent Medicine, 154(1), 23-30.
- Panel. (1998). European Study Tour: Maastricht, Netherlands. July 30, 1998.
- Pender, N. (1996). Health promotion in nursing practice (3<sup>rd</sup> ed.). Stamford, CT: Appleton & Lange.
- Pender, N., Murdaugh, C., & Parsons, M. (2002). Health promotion in nursing practice (4<sup>th</sup> ed.). Upper Saddle River, NJ: Prentice-Hall.
- Perez, S., Sanchez de San Lorenzo, A., & Perez, D. (1997). Pregnant adolescents: An intervention plan. Revista Rol de Enfermeria, 20(229), 10-15.
- Piaget, J. (1977). The development of thought: Equilibration of cognitive structures. NY: Viking Press.
- Plant, B., Mcfeely, S., Flynn, S. (1998). Innovation in general practice: A service for teenagers. Nursing Standard, 13(16), 36-39.
- Richardson, K. (1999). Adolescent pregnancy and substance use. JOGNN: Journal of Obstetric, Gynecologic, & Neonatal Nursing, 28(6), 623-627.
- Rivera-Batiz, F. (1994). The multicultural population of New York City: A socioeconomic profile of the mosaic. In F. Rivera-Batiz (Ed.), Reinventing urban education:



- Multiculturalism and the social context of schooling. NY: Institute for Urban and Minority Education Press.
- Rogowski, J. (1999). Measuring the cost of neonatal and perinatal care. Pediatrics, 103 (1), e329. [On-line]. <http://www.pediatrics.org/cgi/content/full/103/1SE1/329>.
- Rossi, A. (1997). The impact of family structure and social change on adolescent sexual behavior. Children and Youth Services Review, 19(5/6), 369-400.
- Schinke, S. (1998). Preventing teenage pregnancy: Translating research knowledge. Journal of Human Behavior in the Social Environment, 1, 53-67.
- Schlaff, A. (1991). Boston's Codman Square Community Partnership for health promotion. Public Health Report, 106(2), 186-191.
- Schofield, G. (1994). The youngest mothers: The experience of pregnancy and motherhood among young women of school age. Brookfield, VT: Avebury.
- Seguire, M., & Chalmers, K. (2000). Late adolescent female smoking. Journal of Advanced Nursing, 31(6), 1422-1429.
- Sherwood-Hawes, A. (2000). Children having children: Teenage pregnancy and parenthood. In D. Capuzzi, & D. Gross (Eds.), Youth at risk (3<sup>rd</sup> ed., pp. 243-280). Alexandria, VA: American Counseling Association.
- Shouse, R. (1995). Academic press and school sense of community: Sources of friction, prospects for synthesis. Arlington, VA: National Science Foundation. (ERIC Document Production Service No. ED387868).
- Siecus/Advocates for Youth. 1999. Survey of Americans' views on sexuality education. Washington, DC: Author.



- SPSS. (2000). SPSS Advanced Models 10.1 for Windows. Chicago, IL: SPSS Inc.
- Taylor, H., Klein, N., Schatschneider, C., Hack, M. (1998). Predictors of early school age outcomes in very low birth weight children. [On-line]. <http://www.medscape.com/server-java/>.
- Terry-Humen, E., Manlove, J., & Moore, K. (2001). Births outside of marriage: Perceptions vs. reality. Child Trends Research Brief. Washington, DC: Child Trends.
- Upchurch, D., & McCarthy, J. (1990). The timing of first birth and high school completion. American Sociological Review, 55, 224-234.
- U.S. Bureau of the Census. (1998). Current population reports, Series P23-194, Population profile of the United States: 1997. Washington, DC: U.S. Government Printing Office.
- U.S. Department of Education. (1997a). Digest of education statistics: 1997. Washington, DC: National Center for Education Statistics.
- U.S. Department of Education. National Center for Education Statistics. (1997b). The elementary school performance and adjustment of children who enter kindergarten late or repeat kindergarten: Findings from national surveys. NCES 98-097. Washington, DC: National Center for Education Statistics.
- U.S. Department of Health and Human Services. (1999). Temporary assistance for needy families (TANF) [On-line]. <http://www.acf.dhhs.gov/programs/opre/characteristics/fy98/sum.html>.

U.S. Department of Health and Human Services. (2000). Healthy People 2010 [On-line].

<http://www.health.gov/healthypeople/document/tableofcontents.html>.

U.S. House of Representatives. (1996). Personal Responsibility and Work Opportunity Reconciliation Act of 1996. (Conference Report H.R. 3734, Report No. 104-725).

Washington, DC: U.S. Government Printing Office.

Ventura, S., Martin, J., Curtin, S., Menacker, F., & Hamilton, B. (2001). National vital statistics report, 49(1). Hyattsville, MD: National Center for Health Statistics.

Wadsworth, B. (1996). Piaget's theory of cognitive and affective development:

Foundations of constructivism (5<sup>th</sup> ed.). White Plains, NY: Longman Publishers.

Weiler, J. (2000). Codes and contradictions: Race, gender identity, and schooling. Albany,

NY: SUNY Press.

Wingert, P. (1998). The battle over falling birthrates. Newsweek, 131(19), 40.

Wolfe, B., & Perozek, M. (1997). Teen children's health and health care use. In R.

Maynard (Ed.), Kids having kids (pp. 181-203). Washington DC: Urban Institute.



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## Appendix A

### Research with Human Subjects Protocol Review

To: Beverly Ann David

From: Constance Mier Ph.D., Chair

Date: August 16, 2001

Protocol Number: 01-08-030

Protocol Title: Adolescent childbearing: Geographic and demographic disparities in Palm Beach County

The Board has given your protocol exempt status, meaning you may proceed with data collection with no further involvement from the IRB. If any changes are made to the protocol, please contact the IRB chair to determine whether exempt status remains.

Constance Mier  
Dept of Sport & Exercise Sciences  
Barry University  
11300 NE 2<sup>nd</sup> Ave  
Miami Shores, FL 33161

If you have any questions, please contact the Chair at 305-899-3573.

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Note: The investigator will be solely responsible and strictly accountable for any deviation from or failure to follow the research protocol as approved and will hold Barry University harmless from all claims against it arising from said deviation or failure.

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