

ASSOCIATIONS BETWEEN TEENAGE BIRTHS AND RACE/ETHNICITY,
SOCIOECONOMIC CHARACTERISTICS, AND ADVERSE
BIRTH OUTCOMES IN TEXAS

THESIS

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by
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ABSTRACT

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Teenage pregnancy and childbearing are a major concern to public health worldwide. The United States has higher teenage pregnancy and birth rates than any other industrialized country. Texas ranked first in the nation for teenage pregnancy and fourth for teen birth rate with 62 births per 1,000 females in 2005. There were approximately 18,988 births to mothers ages 17 years of age or younger, which represented 4.9% of the

total live births to Texas residents. The percents of teenagers 17 years or younger who had births for Hispanic and African Americans are 6.7% and 6.2% of all race specific teenagers respectively, compared to 2.3% for White. The purpose of the study is to investigate if race/ethnicity and socioeconomic factors influence teenage births in the state of Texas and if teenage births are associated with adverse birth outcomes in Texas. This study used the data from the Center for Health Statistics of the Texas Department of State Health Services for teenage births and socioeconomic characteristics in 2005. Data were analyzed using the SPSS PASW Statistics 18. The result of Pearson Chi square test showed that the teen births were significantly associated with race/ethnicity in Texas. The Pearson correlation test found a significant negative relationship between the percent of teen births at the age of 17 years old and younger and per capita personal income ($r = -0.430$). It indicated that the counties with high percent of teen births were statistically significant correlated with the counties with the low per capita personal income across the state. The results also found that there was significant positive relationship between the percent of teen births at the age of 17 years old and younger and unemployment rate, percent of children 0–17 years old living below poverty, and percent of Medicaid covered births ($r = 0.239$, $r = 0.594$, and $r = 0.433$, respectively). It suggested that high percent of teen births was associated with lower per capital personal incomes, a higher percent of unemployment rate, a higher percent of children who were living in poverty, and a higher percent of births receiving Medicaid assistance. The association of teen births and children 0–17 years old living below poverty was much stronger than that of teen births to any other socioeconomic variables in the analysis

($r = 0.594$). The unemployment rate was significantly correlated with the teen births across all counties, but the association was weak ($r = 0.239$). The results showed that the percent of teen births was significantly negatively associated with the percent of pregnant mothers receiving late or no prenatal care. There was a significantly positive relationship between the percent of teen births and the percent of low birth weight infants, but the association was weak ($r = 0.149$). The results indicated that a high percent of teen births was significantly associated with a high percent of low birth weight and a low percent of mothers receiving late or no prenatal care for all the counties in Texas. Statistical significance level for all tests was set at the $P < .05$. This study investigated the relationship between the teen births and race/ethnicity, socioeconomic indicators and undesired birth outcomes in Texas. It revealed the following: teenage mothers were more likely to come from minority group; more likely from poor, low income, unemployed families; more likely to receive public assistance; more likely to give births to low birth weight; and less likely to receive appropriate prenatal care. These findings can provide policy makers with information to make better decisions in designing programs to prevent teenage pregnancy and births in Texas. Also, the study could serve as a basis and suggest directions for future research, programs design, and community education aimed to prevent teenage pregnancy and births.

CHAPTER I

INTRODUCTION

Statement of the Problem

Teenage pregnancy and childbearing are a major concern to public health worldwide. Amazingly, the United States has higher teenage pregnancy and birth rates than any other industrialized country (United Nations Population Fund, 2003). According to the Guttmacher Institute (2010), *U.S. Teenage Pregnancies, Births and Abortions: National and State Trends and Trends by Race and Ethnicity*, approximately 822,000 teenagers younger than 20 and over 15 years old experienced pregnancy in 2000. Thirty-four percent of the pregnancies occurred among fifteen, sixteen and seventeen years old girls. As reported by Centers for Disease Control and Prevention (CDC, 2010), more than 10% of total births occurred to teenage mothers in 2008.

In 2005, Texas ranked first in the nation with 88 pregnancies per 1,000 females for ages 15 through 19, and ranked fourth for this age cohort for teen birth rate with 62 births per 1,000 females (Guttmacher Institute, 2010). There were approximately 18,988 births to mothers ages 17 years of age or younger, which represented 4.9% of the total live births to Texas residents in 2005. Among them, Hispanic births and African American births accounted for 6.7% and 6.2% of the births to mothers 17 years of age or younger

compared to 2.3% for White births. According to the Texas Department of State Health Services (TDSHS Center for Health Statistics, 2008), the estimated population of Texas in 2005 was 22,859,968. White and Hispanic constituted 49.1% and 35.6% of the population, respectively. African Americans made up 11.4% and 3.9% belonged to other races. Among the 18,090 births delivered to teens ages 15 to 17 years old in Texas in 2005, 68% of mothers were Hispanic, 13% were African American, 18% were White and 1% were other races. The birth rate for teens aged 15 to 17 years old was 35.3 per 1,000 in Texas, compared to the nation level of 21.4 per 1,000 in 2005.

Each of the 254 counties in Texas has an assigned number. With the intention to provide high quality public health services at the local and statewide level, the counties are also grouped into eleven health service regions (Figure 1). However, there are only eight regional public health offices for administrative purposes. Regions Two and Three belong to the same regional office in Arlington (TDSHS Center for Health Statistics, 2007). Region Five is divided into a northern part, which is administered with Region Four by a regional office in Tyler, and southern part, which is administered with Region Six from a regional office in Houston (TDSHS Center for Health Statistics, 2007).

Researchers have explored the reasons for the high rates of teenage pregnancy and childbearing. Some have found that teenage pregnancy and childbearing rates were associated with the ethnic composition of the population (Hogan, Sun, & Cornwell, 2000). From 1960 to 1992, the birth rate of 15–19 years old teenagers tripled in America. Hogan, Sun, and Cornwell (2000) investigated the reasons for the escalating changes in adolescent pregnancy and birth rates and found that it was due to the dramatic increasing



Figure 1: The map of health service regions in Texas.
(Retrieved from www.dshs.state.tx.us.)

number of single-parent families in America.

Research reveals that unmarried teen births are positively correlated with low socioeconomic status, single-parent family, and minority populations (Blake & Bentov, 2001). Most single-parent families are due to being unmarried or divorced. Adolescents who grow up in these households and are raised by single parents have shown to be vulnerable to experience pregnancy and childbearing due to the lower and unstable

incomes of single-parent family (Wu & Martinson, 1993). Furthermore, the single parents may have limited control over their teens' behavior compared to both parents, which also contributes to teenage pregnancy and childbearing (Blake & Bentov, 2001). African American and Hispanic women from poor, single-parent families are more susceptible to become pregnant during their teens than their counterparts from higher socioeconomic levels or White females (Blake & Bentov, 2001). Due to poverty, the youth are unable to continue their education. In addition, the lack of education for the poor teenager's mother also influences her children's decision in pursuing education. Consequently, the youth living in poor families may choose to work rather than pursue education, perhaps which could increase the opportunities to become teenage mothers.

Moore (2008) classified the factors that may contribute to the high teen birth rates in the United States as follows: compositional, distal, and proximal factors. Compositional factors include the changes in demographic distribution (e.g., high-fertility groups) and the various patterns of immigration; distal factors refer to the inequality of socioeconomic status, access to proper health services and societal norms; and proximal factors represent some behavioral variables such as sexual activity, contraceptive use, and abortion (Moore, 2008).

Investigators have determined a variety of definite negative consequences are associated with teenage pregnancy and childbearing. Notably, adolescent mothers are more likely to be socioeconomically disadvantaged than adult mothers (Bissell, 2000). Pregnancy and childbearing often foreshadows a life of poverty, unemployment, welfare dependency, low education and compromised child development (Hoffman, 1998).

Steven-Simon and Lowry (1995) asserted that “the negative effect of early childbearing on the educational and vocational achievements of young Americans could be a reflection of the self-selection of academic underachievers to the teenage childbearing group” (p. 912). Bissell (2000) summarized that teenage mothers are less likely to finish high school and more likely to work at non-professional and low-income jobs, experience unemployment, receive welfare benefits, live in poverty and stay with single parent as compared to women who delay childbearing to an older age. Research indicates that the negative consequences of teen pregnancy are mainly dependent on race/ethnic background and income level (Bissell, 2000).

One study discovered infants delivered by teen mothers have more adverse health outcomes than those to older mothers, including high rates of low birth weight, repeat birth, preterm delivery, and other health risks to the infants (Oppel & Royston, 1971). The trend remains the same from the recent statistical data of teenage births. Teenage mothers and their children, being considered as a high-risk group, should require more social attention and support (Oppel & Royston, 1971). Overall, teenage pregnancy and childbearing can bring numerous medical, economic, and social problems to society.

Background and Significance

In 1972, teenage pregnancy rates for 15-19 years old were 95.1 per 1,000. The rates increased each year peaking in 1990 with 116.9 per 1000 births per year (Guttmacher Institute, 2010). A downward trend occurred since 1990. In 2005, the U.S. teenage pregnancy rate declined to its lowest point in more than 30 years (69.5 per 1,000) and the

teenage birth rate also fell to the lowest point (40.5 per 1,000) for over three decades, consistent with the teenage pregnancy rate (Guttmacher Institute, 2010). However, in 2006, both of the trends reversed; following a 14-year downward trend between 1991 and 2005, the teenage pregnancy rate and birth rate increased for the first time rising to 71.5 and 41.9 respectively (Guttmacher Institute, 2010). In 2007, the teenage birth rate increased 42.5 live births per 1,000 females, with approximately 445,045 live births to teenage mothers in the United States (National Center for Health Statistics, 2010).

Given the increasing trend for teenage pregnancy and birth rates in the United States, programs and interventions designed to prevent teenage pregnancy and repeat births have become widely available. Generally, most programs or policies attempt to reduce and prevent adolescent pregnancy by focusing on a special adolescent population — for example, economically disadvantaged teenagers of racial or ethnic minorities. These adolescents are typically at great risk for early pregnancy and childbearing since their rates of pregnancy and childbearing are higher than the normal; in addition, they tend to suffer more adverse consequences as a result of early pregnancy and childbearing (Polit & Kahn, 1986). The phenomenon was also noted in an article that “teen births are associated with negative educational, economic, behavioral, health and juvenile justice costs” (Herrman, 2008, p. 42).

Bissell (2000) has found that the women from socioeconomically disadvantaged families have little incentive to delay pregnancy and childbearing because the delaying of childbearing does not always improve their situation of poverty or low education. As a result, the programs and interventions aimed at preventing teenage pregnancy are less

likely to function effectively until the policy makers design programs more focused on the future development of the teens. Research shows that students who have high expectations for their academic and career achievements are less likely to become pregnant and teen parents than others with low expectations (Manlove, 1997; Moore, Manlove, & Glei, 1998). Therefore, the policies and interventions that allow the special group of teens to have more opportunities of receiving education and vocational training, which could potentially change their poor situation with high expectation for their future, may be more effective than other approaches for the socioeconomically disadvantaged teen girls (Blake & Bentov, 2001). Identification of the determinants of high teenage pregnancy rate and effective programs may assist state and local health departments in designing and implementing successful policies based on these insights to prevent teen pregnancy.

Texas Statistics

In 2005, the age-specific birth rate to mothers ages 15 to 19 years old was 59.9 per 1,000 women regardless of race/ethnicity (Table 1). It was dramatically highest among Hispanic teens with 92.0 per 1,000 women, while White teens had 31.2 and African American teens had 62.7 births per 1,000 women. In the age-specific group of mothers between 10 to 14 years old, the birth rate for all races combined was 1.1 per 1,000 women. African American and Hispanic adolescent mothers aged 10 to 14 years were 1.8 and 1.7 respectively, which were almost six times as likely as White group.

Table 1: Race/ethnicity and age-specific rates† (live births per 1000 women in the race/ethnicity and age group); Texas residents, 2005

Age	White‡	African American‡	Hispanic	All Races
10–14	0.3	1.8	1.7	1.1
15–19	31.2	62.7	92.0	59.9
20–24	91.4	136.2	168.7	128.8
25–29	117.2	105.7	143.0	126.8
30–34	95.4	66.7	98.7	93.4
35–39	43.8	30.3	48.8	44.0
40–44	7.5	6.6	10.8	8.4
All ages§	61.7	67.9	98.5	76.7

† Rates were calculated using population data from the Texas State Data Center. Births of unknown race/ethnicity, and of racial/ethnic groups other than White, African American or Hispanic were included with white for the purposes of calculating birth and fertility rates.

‡ Includes women of other and unknown race/ethnicity.

§ The general fertility rate. Numerator includes mothers of unknown ages; denominator is women 15–44 years of age.

(Retrieved from www.dshs.state.tx.us)

Prenatal Care

Prenatal care is considered an important indicator for the health of infants. In 2005, the live births with prenatal care beginning within the first trimester for all races constituted 63.7% (Table 2). There were 73.6% White live births with prenatal care beginning within the first trimester, which was higher than the level of all races combined. While the percentages of early prenatal care for African American and Hispanic were 56.7% and 57.4%, both of them were lower than White and all races combined level. For

the prenatal care within the second and third trimester, African American and Hispanic have higher percentages than White and all races combined. There were 4.8% of live births without prenatal care for all races in 2005. It is obvious that Hispanic had the highest percent of live births without prenatal care among the four comparable groups. The data show that the live births of minorities tend to receive late or no prenatal care in Texas.

Table 2: Trimester prenatal care began, Percent of Live Births‡; Texas residents, 2005

Trimester	White†	African American	Hispanic	All Races
1st	73.6	56.7	57.4	63.7
2nd	19.3	28.9	28.4	24.9
3rd	4.4	9.4	7.8	6.7
No care	2.6	5.1	6.4	4.8

† Includes women of other and unknown race/ethnicity.

‡ Denominator for percent excludes missing data.

Note: Due to rounding, percents may not sum 100%.

(Retrieved from www.dshs.state.tx.us)

Low Birth Weight and Very Low Birth Weight

There were 8.3 percent of live births with low birth weight (< 2,500 grams) born to Texas residents, approximately 32,006 low birth weight infants in 2005 (Table 3). It remains much higher for African American mothers (14.1%) giving birth to a low birth weight infant than that of Hispanic mothers (7.5%) and White mothers (7.7%). Clearly,

Table 3: Low birth weight and very low birth weight, by mother's race or ethnicity; Texas residents, 2005

Race/Ethnicity	Very Low Birth Weight (<1,500 grams)		Low Birth Weight (<2,500 grams)	
	Number of Births	Births %	Number of Births	Births %
White†	1,951	1.3	11,709	7.7
African American	1,318	3.1	5,985	14.1
Hispanic	2,372	1.2	14,312	7.5
All Races	5,641	1.5	32,006	8.3

† Includes women of other and unknown race/ethnicity.

(Retrieved from www.dshs.state.tx.us)

the incidence of low birth weight infants is higher for the youngest and oldest mothers than any other age group. There were 10.5 percent of births born to mothers aged 14 and younger and 12.1 percent of births to mothers aged 40 and older. Births to very low birth weight (< 1,500 grams) made up 1.4% of all live births. The distribution of very low birth weight infants was similar to low birth weight infants, and African American mothers still had the highest percent of giving births to very low birth weight infants in 2005 (Table 4).

Hypotheses and Assumptions

In this study, it is assumed that all the data from federal and state governmental agencies are complete and correct. There are no underreported data. All 254 Texas counties were used and included in the analysis. In order to examine the relationship between teen births and race/ethnicity, and socioeconomic indicators, as well as the relationship between teen birth rate and the adverse birth outcomes, it is hypothesized that

Table 4: Low birth weight and very low birth weight, by mother's age; Texas residents, 2005

	Very Low Birth Weight (<1,500 grams)		Low Birth Weight (<2,500 grams)	
Age	Number of Births	Births %	Number of Births	Births %
10–14	23	2.6	94	10.5
15–19	842	1.6	5,000	9.8
20–24	1,385	1.3	8,778	8.1
25–29	1,400	1.4	7,683	7.4
30–34	1,175	1.5	6,236	7.9
35–39	629	1.7	3,299	9.2
40+	187	2.5	915	12.1
Unknown	0	0.0	1	14.3
Total	5,641	1.5	32,006	8.3

(Retrieved from www.dshs.state.tx.us)

1. There is a statistically significant association between teenage (aged 15–17 years old) births and race/ethnicity in Texas.
2. Teenage (17 years old and younger) births are significantly associated with per capita personal income, unemployment rate, the teens living below poverty, and the Medicaid covered births in Texas, respectively.
3. There is a significant relationship between teenage (17 years old and younger) births and delayed prenatal care (late or no prenatal care) and low birth weight in Texas, respectively.

Purpose of the Study

This study will investigate if race/ethnicity and socioeconomic factors influence teenage births in the state of Texas and if teenage births are associated with adverse birth outcomes in Texas.

CHAPTER II

LITERATURE REVIEW OF THE RELATED WORK

Reasons and Consequences of Teenage Pregnancy and Childbearing

Tabi (2002) posited that teenage pregnancy and childbearing among minorities were complex problems originated from a range of certain demographic and social factors that require multifaceted interventions. Minority youth are more likely to become pregnant and become parents at an early age because of their low socioeconomic status (Tabi, 2002). However, the deeper reason that underlies the low socioeconomic status is the lack of adequate resources and support systems available in their communities, which prevents teenagers from continuing their education or career pursuits (Tabi, 2002).

As a result of pregnancy and parenthood, the adolescent mothers often experience disrupted education and cannot finish their formal schooling. It is not easy for them to find good jobs and gain economic independence because of the influence of low education. Poverty due to teenage pregnancy might tend to be persistent throughout the adolescent mother's entire life; to a certain extent, a teenage pregnancy could be viewed as not only a psychosocial issue but also gender equality question (Edgardh, 1999). During pregnancy, teenagers have to experience the discomfort of pregnancy and delivery, such as physical discomfort and emotional stress. These factors will definitely influence their school

attendance, which might result in poor school performance; some teenagers may drop out of school before they become mothers. Delivery and childbearing will exacerbate the situation and pose a tough challenge in choosing between school and parenting because caring for the baby will cost them much time and restrict their study time. Therefore, they might fail to complete high school. Disruption of schooling and limited or no time to socialize with their peers set them behind or isolates them from other teens. Pregnancy and childbearing also may prevent teenage mothers from participating in vocational training programs. Poor education attainment combined with weak social skills often leads to unemployment or working at low income positions, which also increases the likelihood of being socioeconomically disadvantaged. Overall, teen mothers are more likely to suffer health, social, and emotional problems and have more adverse consequences than teenage fathers. From this point of view, the teenage mothers may need more social support whether the support is in or outside the health care system (Wahn, Nissen, & Ahlberg, 2005).

Many studies demonstrate that teenage pregnancy is associated with psychological, physical, social, and financial adverse outcomes (Robrecht, 1996; Otterblad-Olausson, 2000; Wahn, Nissen, & Ahlberg, 2005). Young teenage parents are confronted with parental responsibilities while they have to deal with their own development; therefore, more stress is added to adolescent parents, which can lead to loss of confidence, feelings of helplessness, and self-destructive behaviors (Wahn, Nissen, & Ahlberg, 2005). A few studies show a higher occurrence rate of school dropouts for adolescent parents who come from broken families as compared to adolescents living with both parents (Edgardh, 1999;

Wahn, Nissen, & Ahlberg, 2005). In contrast, several studies discussed the positive rewards of teen pregnancy and childbearing such as achieving independent, adult status; maintaining relationships with the child's father; receiving love, attention and recognition; and improving negative family environments (Kegler, Bird, Kyle-Moon, et al., 2001; Gallup-African Americank & Weitzan, 2004; Herrman, 2008).

Statistical data show that repeat pregnancy rates among teens are higher than those of older mothers (Polit & Kahn, 1986). Polit and Kahn (1986) found that one in five teenage mothers had experienced pregnancy again within 12 months after delivering their first baby. The negative consequences associated with teenage pregnancy and childbearing will be exaggerated by the occurrence of repeat births (Polit & Kahn, 1986). Research suggest that programs aimed at reducing adolescent pregnancy which are based on community attitudes toward contraception are more effective than those programs which focus on changing beliefs and practices toward sexual activity among adolescents (CDC, 2000). Through the implementation of those intervention programs, teenage pregnancy rates decreased approximately 25% from 1995 to 2002 in the United States. Santelli, Lindberg, Finer, and Singh (2007) reported that 86% of the decline in U.S. teen pregnancy rates resulted from the effective use of contraceptive, while 14% of the drop was attributed to the education of abstinence or delaying sexual activity. In terms of age, the result of analysis indicated that education on delaying sexual activity was more effective than improved contraceptive use for teens aged between 15 to 17 years old, while the decline among those teens ages 18 to 19 years old was entirely due to the improved contraceptive use (Santelli, Lindberg, Finer, & Singh, 2007). The strategies on youth development that

strengthen self-esteem and aid youth in planning for their future have been shown to be effective for special groups of adolescents (CDC, 2000).

Hispanic Paradox

Hispanics has become the second largest ethnic group in the United States, exceeding African Americans. Texas is a Hispanic population intensive state. With the large proportion of Hispanics, more research has focused on the health of Hispanics. Literature demonstrated that there was widespread evidence of Hispanic Paradox, also named Hispanic Epidemiological Paradox in some journals, which existed among American Hispanics. Hispanic Paradox states that Hispanic people in America have better than expected health and mortality outcomes, despite the fact most Hispanic groups are characterized by relatively low socioeconomic status (Turra & Goldman, 2007). This is a paradox because many studies have shown that lower socioeconomic status is consistently related to poor health outcomes. However, Hispanics have a lower mortality rate than those of non-Hispanic Whites with higher poverty rates, although Hispanics are less educated, with less or no health insurance compared with Whites (Sorlie, Backlund, Johnson, & Rogot, 1993; Hummer, Rogers, Amir, Forbes, & Frisbie, 2000; Elo, Turra, Kestenbaum, & Ferguson, 2004).

Markides and Coreil (1986) first discussed the existence of Hispanic Paradox in their article. After reviewing some evidence, Markides and Coreil (1986) concluded that Hispanics have more favorable health profile than African Americans compared to Non-Hispanic, even though African Americans have the similar low socioeconomical

status to Hispanics. The review focused on such key health indicators as infant mortality, life-expectancy, mortality from chronic diseases, and measures of functional health (Markides & Coreil, 1986). Research suggested that infant mortality had an inverse relationship with socioeconomic status. Traditionally, disadvantaged ethnic populations such as African Americans and Native Americans had high infant death rates (Markides & Coreil, 1986). Nevertheless, Mexican American infant death rate was documented to decline to a lower level than previous records. The possible explanation might be that Mexican mothers crossed the border to give birth in the United States for American citizenship for their children, after that the children were taken back to Mexico (Markides & Coreil, 1986). Therefore, these infants deaths would go unregistered and result in misleading interpretation for infant mortality rate in border regions. Underreporting of neonatal deaths might also attribute to the low infant mortality rate since these Mexican families fear contact with government authorities (Markides & Coreil, 1986). Hispanics have lower rates of low birth weight and infant mortality than do Whites and other ethnic groups, which might be due to multiple factors such as genetic, culture, diet, social support and family cohesion (Notzon, Bobadilla, & Coria, 1992; James, 1993; Collins & Shay, 1994; Cobas, Balcazar, Benin, Keith, & Chong, 1996).

CHAPTER III

METHODS

Data Source

According to the most current report by the Guttmacher Institute (2010), *U.S. Teenage Pregnancies, Births and Abortions: National and State Trends and Trends by Race and Ethnicity*, Texas ranked first in teenage birth rate (62 per 1,000) of women aged 15–19 and fourth for pregnancy rate (88 per 1,000) among the fifty states in 2005. The data that will be used in this study are derived from the website of the Center for Health Statistics of the Texas Department of State Health Services (TDSHS), which is an agency of the Texas Health and Human Services System.

The data of demographic and socioeconomic indicators are derived from *Selected Health Facts 2005 Texas* (TDSHS Center for Health Statistics, 2010). Demographic data including census population, ethnicity, gender, and age distributions come from the Texas State Data Center and the Office of the State Demographer at the University of Texas at San Antonio. Population estimates for July 1, 2005, were released in November 2006. Socioeconomic indicators contain unemployment rate, per capita personal income, living below poverty, and Medicaid covered births. Labor force data for unemployment rate were collected by county for the 2005 annual average from Bureau of Labor Statistics

(BLS), U.S. Department of Labor. Per capita personal income is the annual total personal income of residents divided by resident population; it is based on the U.S. Census Bureau county population estimates available in April 2008 (TDSHS Center for Health Statistics, 2009). The number and percent of persons living below poverty were estimated by the Small Area Income and Poverty Estimates (SAIPE) program of the U.S. Census Bureau. SAIPE program provides annual estimates of income and poverty for all states and counties. The estimates of income and poverty are not direct counts from enumerations or administrative records, but they are produced by a model combining survey data with population estimates and administrative records (U.S. Census Bureau, 2009). The number of Medicaid covered births is counted for the number of Medicaid deliveries in the state fiscal year and the percentage is based on ratios to total live births for state fiscal year (TDSHS Center for Health Statistics, 2009). The data set also include some natality data such as births to adolescent mothers, low birth weight infants and mothers of infants receiving late or prenatal care. The percent of the pregnant mothers receiving late or no prenatal care was calculated based on the date of last menses and date of first prenatal visit. The onset of prenatal care occurs within the first trimester.

The data of teenage births are downloaded from the website of TDSHS for the annual report, *Birth to Mothers 17 and Younger in Texas, 2005* (TDSHS Center for Health Statistics and the Vital Statistics Unit, 2008a). The data include the total number of births to mothers 17 years and younger and the percent of the teen births to total live births for each county and region by race/ethnicity in 2005. Race/ethnicity included three categories: White, African American and Hispanic. It is noted that White group consists

of other and unknown race/ethnicity. The denominator used for calculating percent excludes missing data. The percent of teen births to total live births is not computed if the total number of births is less than or equal to 20 or if there are no teen births occurring for some areas in 2005.

The *2005 Texas and Regional Adolescent Birth Fact Sheets* provide regional and state birth rates, repeat birth rates, and proportion of teen births by race/ethnicity among adolescents aged 15 to 17 years. The fact sheets present birth outcome data for teens 15 to 17 years old, including delayed prenatal care, low birth weight, and preterm births to teens (TDSHS Adolescent Health Program, 2010). These fact sheets also have given the age and race specific birth rates for each public health region in 2005. Three age groups to birth rates are classified including 15–17 years old, 18–19 years old and 20 and older. In this data set, the race/ethnicity is defined into four groups: White, African American, Hispanic and other.

The data of the percents of low birth weight for all counties are obtained from the website of TDSHS for the annual report, *Low Birth Weight (< 2,500 grams) Infants in Texas, 2005* (TDSHS Center for Health Statistics and the Vital Statistics Unit, 2008b). Live-born infants weighing less than 2,500 grams at birth are defined as low birth weight infants. The percent of low birth weight was calculated by the number of low birth weight infants divided by the total number of live-born infants in each county in 2005. The denominator for percentage excluded missing data. The percent was not computed if denominator was not greater than 20 or numerator is zero. The data for 18 counties were missing. There were a total of 32,006 low birth weight infants in Texas, and the state level

percent of low birth weight was 8.3 in 2005.

Data Analysis

Data were analyzed using the SPSS PASW (Predictive Analytics Software) Statistics 18 (SPSS Inc, Chicago, Illinois). Descriptive statistics described the demographics, socioeconomic indicators and outcomes of teenage births. Pearson's Chi-square was used to test the significant association between residents and 15–17 years old adolescents who gave birth in Texas with regard to the distribution by race/ethnicity. The association among teen births, socioeconomic indicators and birth outcome variables were measured by Pearson correlation test. County was used as the unit of analysis because it is the smallest unit for the birth data available each year nationally. Correlation between teen births (aged 17 years and younger) and per capita personal income, unemployment rate, teens living below poverty, the Medicaid covered births, low birth weight, delayed prenatal care (late or no prenatal care), and infants' death were examined respectively. Statistical significance level for all tests was set at the $P < .05$.

Table 5: Proportions and Numbers of Residents and Teen Births (age 15–17) by Race/Ethnicity in Texas, 2005

	Residents	Teen Births		Residents	Teen Births
White %	49.10%	18%	Hispanic %	35.60%	68%
White	11,224,244	3,256	Hispanic	8,138,149	12,30
AfricanAmerican %	11.40%	13%	Other %	3.90%	1%
African American	2,606,036	2,352	Other	891,539	181

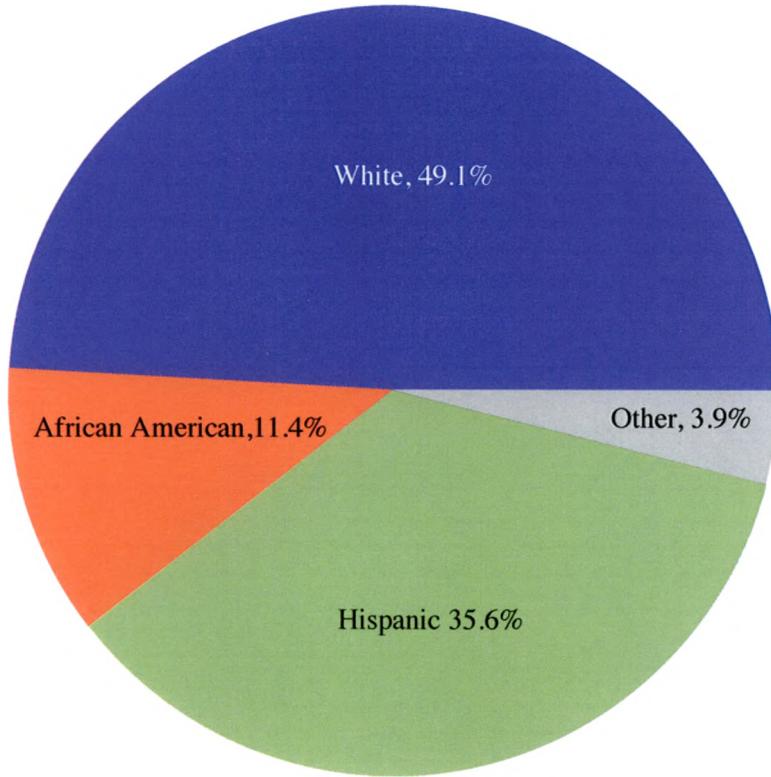


Figure 2: Proportion of Residents in Texas by Race/Ethnicity in 2005

Table 5 presented the proportions of residents and teen births between 15 and 17 years old in Texas by race/ethnicity for the year of 2005. They were also shown in the pie charts of Figures 2 and 3. White accounted for 49% and Hispanic constituted 36% of total population of residents in Texas. By contrast, 18% of teen births to the age of 15–17 years were White and 68% were Hispanic. The percentage of Hispanic teen births was considerably higher than any other race group. The other two race groups, African American and other, showed similar proportion between the residents and teen births. From the data in the table, it can be seen that there is a racial and ethnic disparity in teen births. Hispanic teens are more likely to have births than Whites.

Data concerning birth to mothers 17 and younger were derived from the available

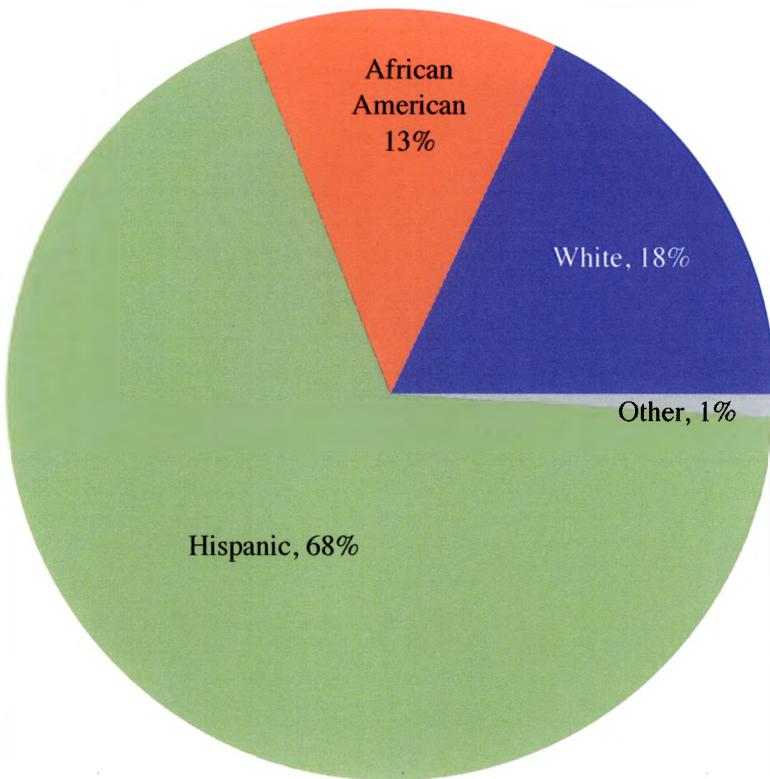


Figure 3: Proportion of Teen Births in Texas by Race/Ethnicity in 2005

materials of TDSHS Center for Health Statistics and the Vital Statistics Unit (2008). The teens used in this analysis were defined as females at the age of 17 and younger. Teen births included births to females age 17 or younger when they delivered their babies. The percent of the teen births was calculated based on the total number of teen births to females less than 17 years of age divided by the total number of live births delivered in each county of Texas in 2005. The denominator for the percent excluded missing data. The percent was not computed if denominator was not greater than 20 or numerator was zero; therefore, the percents of teen births for 25 counties were missed. There were 18,988 births to mothers at 17 years old and younger in Texas regardless of counties and the percent of teen births of the state level was 4.9 in 2005. The available data of per capita

personal income, unemployment rate, percent of children 0–17 years old living below poverty, and percent of Medicaid covered births were used as variables to measure socioeconomic status in this analysis. All the data obtained from TDSHS Center for Health Statistics (2010) were collected for all the residents living in each county in Texas in 2005.

Results

Table 6 provided the counts of the residents and teen births in the four race/ethnicity groups in Texas, respectively. The output of Pearson Chi square test showed that the count of teen births and residents was significantly associated with race/ethnicity (Table 7).

Table 6: Races × Population Crosstabulation

		Population		Total
		Residents	Teen Births	
Races	African American	2,606,036	2,352	2,608,388
	Hispanic	8,138,149	12,301	8,150,450
	Other	891,539	181	891,720
	White	11,224,244	3,256	11,227,500
Total		22,859,968	18,090	22,878,058

Table 7: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9,319.165†	3	.000
Likelihood Ratio	9,504.527	3	.000
N of Valid Cases	22,878,058		

† 0 cells (.0%) have expected count less than 5. The minimum expected count is 705.10.

Table 8: Descriptive Statistics for Teenage Births and Socioeconomic Indicators

	Mean	Std. Deviation	N
Birth to mothers 17 and younger	6.12	2.54	229
Per capita personal income (\$)	26,451.73	6,514.23	254
Unemployment Rate	5.20	1.50	254
Related children 0–17 years percent below poverty	26.42	8.86	254
Medicaid covered births percent, Fiscal Year	57.32	18.19	254

Descriptive statistics shows that the mean of the percent of teen births is 6.12 and standard deviation is 2.54 (Table 8). The percentage of teen births ranges from 1.1 (Somervell County) to 15.7 (Hardeman County) for 254 counties. The average per capita personal income is \$26,451.73. The average unemployment rate is 5.20 and standard deviation is 1.50. The mean of percent of children 0–17 years old living below poverty is 26.42 and standard deviation is 8.86. The mean of percent of Medicaid covered births is 57.32 and standard deviation is 18.19.

Table 9: Correlations between Teenage Births and Socioeconomic Indicators

		Birth to mothers 17 and younger
Birth to mothers 17 and younger	Pearson Correlation Sig. (2-tailed) N	1 229
Per capita personal income (\$)	Pearson Correlation Sig. (2-tailed) N	-.430† .000 229
Unemployment Rate	Pearson Correlation Sig. (2-tailed) N	.239† .000 229
Related children 0–17 years percent below poverty	Pearson Correlation Sig. (2-tailed) N	.594† .000 229
Medicaid covered births percent, Fiscal Year	Pearson Correlation Sig. (2-tailed) N	.433† .000 229

† Correlation is significant at the 0.01 level (2-tailed).

The results of the Pearson correlations find a significant negative relationship between the percent of teen births at the age of 17 years old and younger and per capita personal income ($r = -0.430$, Table 9). It indicates that the counties with high percent of teen births are statistically significant correlated with the counties with the low per capita personal income across the state. There is significant positive relationship between the percent of teen births at the age of 17 years old and younger and unemployment rate, percent of children 0–17 years old living below poverty, and percent of Medicaid covered

births ($r = 0.239$, $r = 0.594$, and $r = 0.433$, respectively). The results indicate that high percent of teen births is associated with lower per capital personal incomes, a higher percent of unemployment rate, a higher percent of children who are living in poverty, and a higher percent of births receiving Medicaid assistance.

The association of teen births and children 0–17 years old living below poverty is much stronger than that of teen births to any other socioeconomic variables in the analysis ($r = 0.594$). The unemployment rate is significantly correlated with the teen births across all counties, but the association is weak ($r = 0.239$). All relationships in this analysis are determined to be significant by using two-sided significance tests at the 0.05 level.

Table 10: Descriptive Statistics for Teenage Births and Adverse Birth Outcomes

	Mean	Std. Deviation	N
Birth to mothers 17 and younger	6.123	2.5422	229
Percentage of low birth weight	8.417	2.6032	236
Percentage of late or no Prenatal care	62.725	8.2627	236

Table 10 presents descriptive information about the percent of births to teen mothers at 17 years old and younger, the percent of low birth weight infants and the percent of pregnant mothers receiving late or no prenatal care. The mean of the percent of low birth weight infants for 236 counties is 8.42 and standard deviation is 2.60. The average percent of pregnant mothers receiving late or no prenatal care is 62.73 and standard deviation is 8.26.

Table 11: Correlations between Teenage Births and Adverse Birth Outcomes

		Birth to mothers 17 and younger
Birth to mothers 17 and younger	Pearson Correlation Sig. (2-tailed) N	1 229
Percentage of low birth weight	Pearson Correlation Sig. (2-tailed) N	.149† .025 229
Percentage of late or no prenatal care	Pearson Correlation Sig. (2-tailed) N	-.360‡ .000 229

† Correlation is significant at the 0.05 level (2-tailed).

‡ Correlation is significant at the 0.01 level (2-tailed).

The result shows that the percent of teen births is significantly negatively associated with the percent of pregnant mothers receiving late or no prenatal care (Table 11). There is a significantly positive relationship between the percent of teen births and the percent of low birth weight infants, but the association is weak ($r = 0.149$, Table 11). The results indicate that a high percent of teen births is significantly associated with a high percent of low birth weight and a low percent of mothers receiving late or no prenatal care for all the counties in Texas.

CHAPTER IV

DISCUSSION

Race/Ethnicity

The Chi-square test results found that teen births were significantly associated with race/ethnicity. From Table 5, we can see that the percentage of teenage births from a mother of Hispanic origin was considerably higher than that of any other race/ethnic group in Texas. In other words, Hispanic teens are more likely to have births than their counterparts of other races in Texas. The result of this analysis is consistent with previous studies that found a significant association between teenage births and adolescent minorities. This finding could provide policy designers or decision makers with useful information in for reducing adolescent pregnancy or birth rate in Texas.

Considering that Hispanic had the highest percentage of teenage births, the policy makers could focus on this special population when they design and develop programs aimed to prevent teenage pregnancy. Public health workers should consider a variety of services more suitable and more effective to them. Moreover, accessibility and acceptance should be emphasized. Further studies can extend this research involving other factors to explore the possible reasons underlying why the minorities have the high percentage of teenage births, such as social, cultural, religious, and political factors, in order to improve

understanding teenage births.

Socioeconomic Indicators

The results of the Pearson correlations showed the percent of teen births negatively associated with the per capita personal income among the counties in Texas. It implies that counties with higher personal income exhibited lower teen birth percents and the teenagers in the counties with high per capita personal income are less likely to have births. This finding supports the literature that suggests adolescents who became pregnant were often from low-income families (Tabi, 2002).

The analysis also found a significant positive relationship between the percent of teen births and unemployment rate. Furthermore, teen births were positively correlated with children living below poverty level and Medicaid covered births. The results suggested that there was a high percentage of teen births in those counties with high unemployment rates, high percent of children living below poverty level and high percent of Medicaid covered births. The teenagers in the counties with higher unemployment rate, more children living in poverty and higher coverage of public assistance are more likely to have births than that of other counties. These findings are consistent with the report that those teenage mothers and their children were more likely financially disadvantaged (National Center for Health Statistics, 2010).

Unemployment rate could indicate the economic status for an area in part, as unemployment may place people into poverty. The per capital personal income, unemployment rate, and receiving Medicaid support that were significantly associated

with teenage births all represent the poverty level for a population. It is clear that poverty has a large and persistent influence on teenagers who had births. Moreover, low income might limit access to contraceptives or abortion facilities. If access to abortion services is actually equal among all teenagers whether from high income or low income families across the state, then it should be questioned if teenagers in poverty have high percent of teen births. Polit & Kahn (1986) pointed out that the poverty and family circumstances made adolescents especially susceptible to early pregnancy, which could lead to and result in long-term educational and occupational adverse outcomes. Typically, the educational and occupational opportunities of teenagers from poor families are different from that of teenagers living in high-income families. To reduce and prevent teenage pregnancy or births, social and economic factors should be essentially considered. The public policies should offer realistic and accessible rewards or life options to the special population such as financial support to encourage continuing their education and affordable occupational training, which could help them stay away the persistence of poverty.

It is known that correlation analysis is not a causation test and we cannot support that poverty caused the teenager births. Thus, additional research would be necessary to identify what other factors accounted for the high teen birth rate and clarify how these characteristics influence the teenager births.

Prenatal Care

A significant correlation is found between teen births and delayed prenatal care (late or no prenatal care). The counties with high percentage of teenage births have a high

percentage of receiving late or no prenatal care. It indicates that there might be a large proportion of teenage mothers receiving late or no prenatal care. The prenatal educational programs are designed to provide the pregnant women with better information in health care practices and nutrition that could help a better neonatal outcome. Therefore, the infants and the adolescent mothers will essentially benefit from it if they participate in such program.

The access to prenatal care services is financially and geographically different, although the prenatal health services are similar across the state. As a result, differences in the proportion of teenagers living in poverty as well as unequal accessibility to prenatal care services may explain in part why teenage mothers are less likely to receive prenatal care services. Identification of the age-specific population without prenatal care may provide useful information to policy makers and assist them in designing and implementing population-specific health care services at state and local levels. It will play an important role in improving the maternal and child health for the state. This analysis can be viewed as a basic exploration for the prenatal health status of the teenage mothers and their infants. More research needs to be conducted to investigate the possible factors that influence the teenage mothers in receiving prenatal care based on this result in order to improve the overall health of teenagers and infants.

Low Birth Weight

The Pearson correlation test result found teen births were significantly positively associated with low birth weight infants in all Texas counties. It implies that teenage

births are more likely to have low birth weight babies. There was also an earlier study discussed in the literature showing similar results. However, it should be noted that there is a large proportion of Hispanic teenage births in this research data. Among the 18,988 teen births to mothers 17 years or younger, Hispanic account for 68% (Figure 4). White are 18% including other and unknown race/ethnicity and African American are 14%, as shown in Figure 4. Also, previous research showed that Hispanics did not have the evidence of high risk of giving birth to low birth weight. In addition, Hispanic Paradox effect also revealed that Hispanics had lower rates of low birth weight than do Whites and other ethnic groups. Considering all of these factors, it seems likely that the teen births may not associate with low birth weight because of the large population of Hispanic teenager mothers in Texas. This result obtained in this study did not follow the pattern. Hence, the youth of teen mothers or the various proportions of African American teenage births might contribute to the inconsistency, since statistical data indicate that the risk of giving births to low birth weight occurs more frequently in African American mothers, youngest teen mothers and oldest mothers than other groups. It accords with the report that the teenage mothers and their children have a generally less favorable health status than older new mothers and their children (National Center for Health Statistics, 2010, p.6). Future study should be undertaken to probe this controversial finding in an attempt to identify what other variables might be influencing the low birth weight of teen births by collecting more detailed and specific data.

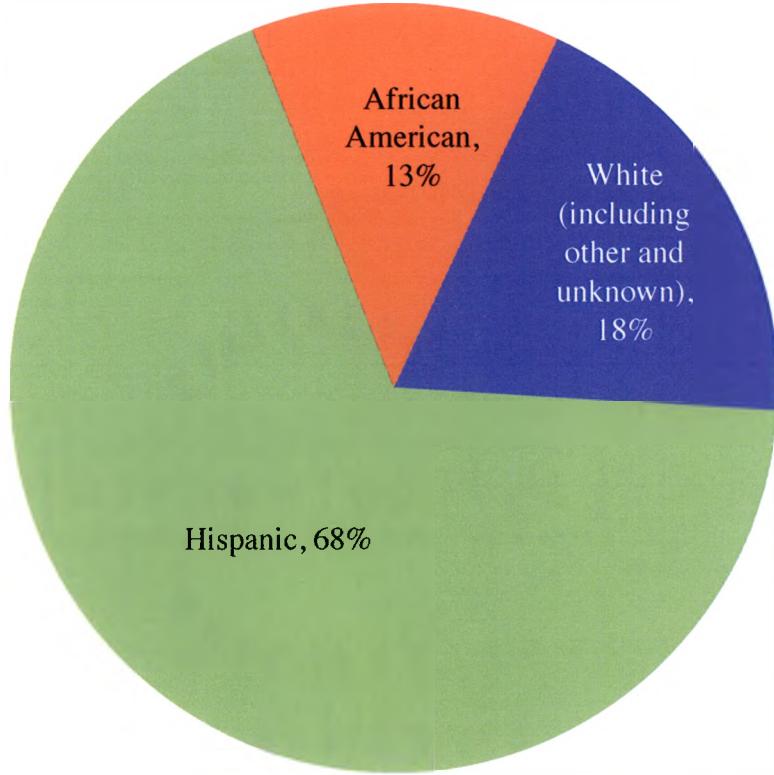


Figure 4: Births to Mothers 17 and Younger in Texas, 2005

Limitations of the Study

There are some limitations in this study. First, it may not be generalized to other states or the entire U.S. population because the data collected and analyzed in this study are restricted in Texas. There are a high proportion of Hispanic residents in Texas, which might be a confounding factor. Second, using the county as the unit of analysis could be subject to constitute some unidentified problems because the difference in proportion of race/ethnicity group exists among counties that might influence the percent of the teenage births for each county. Third, the percent of receiving late or no prenatal care used in the correlation analysis is for the whole population of pregnant women not age specific. The large proportion of poor pregnant women living in the county might contribute to high

percent of receiving late or no prenatal care since the poverty could limit the access to prenatal care services. In addition, the geographic difference among counties also affects receiving prenatal care, which might be a contributing factor. Finally, the percent of low birth weight was calculated for the whole birth population in each county as well. There could be some factors influencing the data. African American is the major population in some counties, which might account for the percent of low birth weight for counties because African American race has a tendency of giving births to low birth weight. Moreover, some other factors might have an effect on birth weight like nutrition or congenital deficiency. On the whole, there are certain factors that might associate with teen births not analyzed in this study because of availability of data, such as the education of teen mothers' parents, the age of pregnant adolescents' mothers having their first child and the marital status of teen mothers' parents.

CHAPTER V

CONCLUSION

This study has investigated the relationship between the teen births and race/ethnicity, socioeconomic indicators and undesired birth outcomes in Texas. It has revealed the following: teenage mothers are more likely to come from minority group; more likely from poor, low income, unemployed families; more likely to receive public assistance; more likely to give births to low birth weight; and less likely to receive appropriate prenatal care.

These findings can serve as a basis to provide information to help make better decisions when the policy makers design programs to prevent teenage pregnancy and births. Since there is evidence that the teenage births are associated with minority and socioeconomic status, it is suggested that poor minority teenagers should be the targets of intervention programs. Public health policy planners engaged in reducing teen births should consider the importance of societal and economic factors. To achieve desired outcomes, educational programs need to intervene with targeting adolescents in an effective manner. The emphasis of public health programs and adolescent education programs should consider addressing the social and economic factors for vulnerable population and help them develop a long term life plan. Of course, reducing sexual

activity and improving the use of contraceptive are also included in these programs.

Although therapeutic abortion may be considered as an intervention technique to reduce teenage births, it will bring health problems to teenagers as well as involve an ethical issue. The solutions should focus on preventing teen pregnancy rather than abortion services.

This study examined the risk factors associated with teenage births; however, the births to teen mothers deserve consideration since childbearing is an important adolescent health and social issue. Special attention should be paid toward the health of the teenage mothers and their infants. The teenage mothers should receive appropriate prenatal care and ongoing medical follow-up to ensure the safety of delivery and the health of their infants. Continuity of care to make sure the physical and psychological growth and development of their infants should be included in the education programs. The policy and program makers should give these teenagers attention and design particular services to help them raise their children with good outcomes. It is expected to require collaboration among health, education and other community organizations. The health of the teenagers and their children will predict much of the future overall public health of a community; therefore, it is necessary to take it into consideration. These findings have implications and provide directions for future research, programs design, and community education to prevent teenage pregnancy and births.

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