Invisible Adolescents: Pregnancy in Women Under Age 15 in Mexico

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BACKGROUND

Adolescent pregnancy has been an important issue in Mexico, particularly in the past years. Recent data in Mexico have shown decline in fertility lower than expected, particularly among adolescents. Moreover, policies have largely ignored an important subgroup of adolescents: 10-14 year-old girls. Recently, Mexico has developed a new type of birth certificate that has allowed us to examine pregnancy characteristics among this particular age group, and to analyze the association between young maternal age and the risk of negative birth outcomes. This analysis has revealed to us the reality of a group of women that has been invisible for demographic surveys: females under age of 15.

OBJECTIVE

The objectives of this study are: (1) To describe socio-demographic characteristics regarding childbirth and its outcomes within this population; (2) To compare their characteristics with other reproductive age groups, and (3) To assess the association between young maternal age and higher risk of negative birth outcomes.

DATA AND METHODOLOGY

In 2008, the Ministry of Health in Mexico developed and implemented a new type of birth certificate. This new birth certificate includes data regarding socio-demographic characteristics, antenatal care, and birth outcomes, of all women who give birth in the country each year. For this analysis we have used birth certificate data for the years 2008, 2009, 2010 and 2011 (DGIS 2008; DGIS 2009; DGIS 2010; DGIS 2011). This is the first time that this unique database has been used.

CONCLUSIONS

Our results show a steady proportion of pregnancies among women aged 14 or younger in the last 4 years, accounting for a little less than 0.7% of 8 million births registered. This group of adolescents exhibits a more disadvantaged position than the rest of the adolescents (15-19), in terms of education and socioeconomic level. Interestingly, our results show significant differences in birth outcomes, such as birth weight and gestational age. Additional and more accurate policies are required to attend this traditionally ignored age group.
INTRODUCTION

Today, more than ever, Mexico is a young country. Currently, 37.9 million Mexicans are considered youth, i.e., 32.6% of the population are between ages of 12 and 29. Of these, 19.1 million are women, and of these women, 5.5 million are between age 15 and 19, representing 4.8% of the Mexican population (CONAPO, 2013).

One of the most important risks faced by this population in terms of its sexual and reproductive health is teenage pregnancy. According to UNFPA, about 16 million women aged 15-19 give birth each year, representing 11% of all births worldwide (UNFPA, 2013). In 2010, there were 369,202 births among girls aged 15-19 in Mexico, which represents 16.4% of all births in the country (CONAPO, 2012).

Adolescent pregnancy is a well-documented health issue. It is associated with a higher risk of pregnancy complications and negative birth outcomes—low birth weight, preterm pregnancies, and infant and maternal mortality, among others. Teenage pregnancy is also a development issue. It is strongly associated with poverty, low education levels, and gender inequities.

In Mexico, teenage pregnancy has been an important issue of population politics. Recent data in Mexico have shown less decline in fertility than expected. Total fertility rates decreased by 16% between 2000 and 2010, but adolescent fertility rates declined by only 7%, from 71.4 to 66.8 births per 1,000 females aged 15 to 19. Despite the fact that teenage mothers are supposedly given priority in reproductive health policies in Mexico, in 2009, two out of three adolescents did not use any contraceptive method in their first sexual intercourse, and four in ten teenage pregnancies were unplanned.

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1 Special tabulations of data from CONAPO: Proyecciones de la Población de México 2010-2050.
In addition, adolescent pregnancies are the result of unmet need for contraception, and one in four Mexican adolescent girls have unprotected sex despite not wanting to become pregnant (Schiavon, 2011). Also, recent trends on abortion in Mexico show that unsafe abortion is common among women aged 15–24 (Juárez et al., 2012).

Policies have largely ignored an important subgroup of adolescents: 10-14 year-old girls. This group represents 4.9% of the Mexican population (5.6 millions) in 2010. This group requires special attention. The risk of maternal morbidity and mortality for adolescents is of particular concern: 83% of all hospitalizations of girls between the ages of 15 and 19 are due to maternal causes; and among girls between the ages of 10 and 14, almost one of every three hospitalizations are related to pregnancy, childbirth, post-partum or abortion (Schiavon, 2011). Pregnancies among these girls are often a manifestation of sexual violence, a reality that health professionals have not known how to or perhaps have not wanted to deal with, despite laws, policies and procedures on the subject.

To analyze this particular age group, there are important data sources available in Mexico, such as census data and health surveys. However, many of these suffer from limited sample size and/or lack of information for analyzing pregnancy characteristics among this particular age group, and the association between young maternal age and the risk of negative birth outcomes.

Since 2008, Mexico has implemented a new type of birth certificate. This certificate provides valuable information about socio-demographic characteristics, pregnancy care, and birth outcomes. This study represents a great opportunity to examine this age group, particularly regarding the prevalence of pregnancies in this group; to describe their
socio-demographic characteristics; to compare their characteristics with other traditional age groups; and to assess the association between young maternal age and higher risk of negative birth outcomes. Its analysis represents a unique opportunity to examine this group of women that has been invisible: girls below age of 15.

**OBJECTIVE**

As mentioned earlier, the new birth certificate in Mexico is a unique source of data. Its analysis allows us to analyze teenage pregnancy characteristics, particularly among women between the ages of 10 and 14, and the association between young maternal age and the risk of negative birth outcomes.

The objectives of this study are: (1) To describe socio-demographic characteristics of women between the ages of 10-14 who give birth and analyze their birth outcomes; (2) To compare these characteristics with women from other age groups, and (3) To assess the association between young maternal age and higher risk of negative birth outcomes.

**DATA AND METHODOLOGY**

*Data Source*

In Mexico there are few data sources that allow an adequate analysis of pregnancies among very young women. On one hand, Census data allow us to assess the number of children born to very young women, but it lacks information regarding pregnancy care and birth outcomes. There are some surveys available that allow us to analyze this age
group, but they have a limited sample size and lack of information to allow us to analyze teenage pregnancy characteristics among this particular age group, and to assess the association between age and the risk of negative birth outcomes.

In 2008, the Ministry of Health in Mexico developed and implemented a new type of birth certificate. This new birth certificate is mandatory and free-of-cost. It allows us to obtain socio-demographic characteristics, and information regarding antenatal care and delivery assistance, and birth outcomes, for all women who give birth in the country each year.

For this analysis we used birth certificate data for the years 2008, 2009, 2010 and 2011 (DGIS 2008; DGIS 2009; DGIS 2010; DGIS 2011). These data are fairly new, and some data is missing, especially in the first two years of its implementation. It is also possible that during the first years, some births were misreported. Therefore, in order to have a better picture about what is happening in the period, we pooled the information for all four years for the analysis. This is the first time that this unique database is used.

The variables of interest for this analysis were: (1) socio-demographic characteristics such as maternal age, education level, marital status, occupation, health insurance, and a development index of women’s county of residence; (2) prenatal characteristics such as antenatal care, and previous pregnancies; and (3) birth outcomes, that include type of delivery, birth weight, gestational age, and 5-minute Apgar score.

Maternal age is defined as the age of the mother at the time of delivery. To estimate the prevalence of teenage pregnancies, we used the traditional age groups 10-14, 15-19, 20-24, 25-29, and 30 and above. For the descriptive analysis and to perform the analysis of association between teenage pregnancy and negative birth outcomes, maternal age was
categorized into 4 groups: below 15, 15 to 17, 18 to 19, and 20 to 24 years. We use this last age group as reference group based on the fact that this group is less likely to have adverse birth outcomes (Chen, 2007).

With respect to socio-demographic characteristics, education level was categorized into two groups: elementary education or less, and high school or more. Marital status was categorized into 4 groups: never married, living in consensual union, currently married, and formerly married. Occupational status was categorized into 4 groups: unemployed, housewife, student, and employed. We use a dichotomous variable to distinguish whether the woman had health insurance or not. And finally, in order to measure economic disadvantage, we include a development index\(^2\) of women’s county of residence. This variable is categorized into five categories: lowest, low, middle, high and highest.

For prenatal characteristics, antenatal care measures whether or not the woman received antenatal care beginning in the first trimester, and whether or not the women had previous pregnancies. We did not include other characteristics associated with prenatal care that are commonly used. For example, the total number of prenatal-care visits was excluded because empirical evidence regarding the impact of this variable on birth outcomes is mixed, and sometimes a large number of visits might be an indicator of special pregnancy conditions (Sastry and Hussey, 2003).

\(^2\) The development index corresponds to the index of marginalization estimated by CONAPO (the Consejo Nacional de Población), for each state and municipality in Mexico. This index classifies population by their level of economic disadvantage. This index of marginalization is based on the following variables: % of the population aged 15 or older that is illiterate, % of the population 15 or older without complete primary education, % of inhabitants living in households without drainage or exclusive toilet, without electricity, without potable water, with some level of crowdedness, and with earthen floor, % population living in localities of less than 5,000 inhabitants, and % of the working population paid less than two minimum salaries.
Birth outcomes of interest considered in this study were type of delivery, birth weight, gestational age, and 5-minute Apgar score. For type of delivery, we considered 2 categories: vaginal delivery, and caesarean section. Birth weight was categorized into 3 groups: very low birth weight (live infant weighing <1500g at birth), low birth weight (live infant weighing 1,500 to 2500 g at birth), and without low birth weight (live infant weighing more or equal to 2500 g at birth). It is important to mention that the continuous variable for birth weight presented considerable heaping on digits that are multiples of 500 grams, particularly in 2500, 3000 and 3500 in our dataset, and there is no indication in the dataset to suggest whether these data are due to bias in woman’s recall. Gestational age was categorized into 3 groups: very preterm delivery if the delivery occurred at less than 32 weeks, preterm delivery if it occurred between 32 and 37 weeks of gestation, and no preterm delivery otherwise. Finally, 5-minute Apgar score was categorized in 3 groups: very low Apgar score (<4), low Apgar score (4-7) and good Apgar score (8-10).

We first describe the prevalence of teenage pregnancy among women age 10-14 during the period 2008-2011, by maternal age group. Then, we describe the distribution of the socio-demographic characteristics, prenatal characteristics and birth outcomes by maternal age groups. To assess the association between young maternal age and the risk of negative birth outcomes, we estimate adjusted relative risks (RRs) for each maternal age group, along with their 95% confidence intervals associated for teenage pregnancies, with reference to the age group 20-24. The adjusted relative risk were derived through unconditional multivariate logistic regression models with adjustment for confounding variables, such as education level, marital status, occupation, type of health insurance, and a development index of women’s county of residence, antenatal

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3 Heaping is defined as a misreporting problem in which the distribution of a certain variable exhibits some unexpected “heaps” in some digits, particularly those ending in 5 or 0 (Blanc, 2005).
care, previous pregnancies; and type of delivery. All data were analyzed using IBM SPSS Statistics, Version 21.0.

RESULTS

There were 8,263,020 live births recorded in our consolidated 2008-2010 birth dataset. Among them, 0.7 percent were born to younger teenage mothers, aged 10-14; 18.9 percent were born to women aged 15-19; 29.5 percent to women aged 20-24; 24.5 percent to women aged 25-29 and 25.7 percent to women aged 30 and more. This percentage distribution is similar to that reported in the Mexican Population Projections (CONAPO, 2012).

Our results show that the youngest group was more likely to be less educated, unmarried, to have had inadequate prenatal care as compared with woman aged 20-24, and with the rest of the teenage mothers (Table 1).
Also, the group of very young mothers shows higher rates of very low and low birth weight, very preterm and preterm delivery, very low and low Apgar score, compared with the rest of the teenage mothers and with women age 20-24 (Table 2). In general,
these rates were consistently increased with decreasing maternal age and were always highest among infants born to mothers aged 15 years or younger.

<table>
<thead>
<tr>
<th>Table 2. Frequency of negative birth outcomes by maternal age group. México 2008-2011.</th>
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<tbody>
<tr>
<td>Maternal age (years-old)</td>
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<tr>
<td>No. of live births</td>
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<td>Birth weight</td>
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<td>Very LBW</td>
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<td>LBW</td>
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<td>No LBW</td>
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<td>Gestational age</td>
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<td>Very Preterm</td>
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<td>Preterm</td>
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<td>Term</td>
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<td>5 min Apgar</td>
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<td>0-3</td>
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<td>4-7</td>
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<td>8-10</td>
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To assess the association between young maternal age and the risk of negative birth outcomes, we estimated relative risks with adjustment for education level, marital status, occupation, type of health insurance, and a development index of women’s municipality of residence, antenatal care, and previous pregnancies. Table 3 shows the adjusted relative risks of negative birth outcomes associated with maternal age. Our results show that risks of very preterm delivery, preterm delivery, very low birth weight, and low birth weight increase as maternal age decreases. The risks of very low Apgar score (0-3) is lower for the age groups 15-17 and 18-19 as compared with the age group 20-24, and low Apgar score (4-7) became non-significant with age.
DISCUSSION

For the very first time, data coming from a new birth certificate in Mexico have been used to describe socio-demographic characteristics and birth outcomes of women age 10-14 who have given birth; to compare characteristics of this age group with women of other reproductive age groups, and to assess the association between young maternal age and higher risk of negative birth outcomes.

Our results show a steady proportion of pregnancies among women aged 14 or below in the last 4 years that account for 0.7% of the 8 million births registered. Moreover, this group of very young women is more disadvantaged than the rest of the adolescents (15-19) in many aspects. In terms of education and socioeconomic level, women in this age group have lower levels or education. These data emphasize the need for very early sexual education, based on scientific evidence and with a gender perspective. This sexuality education should promote autonomy, self-determination, respect for others, shared responsibility, and personal health-care, free from ideological influences. In
addition, there is a need for secular informational campaigns and objective information on safe sexuality.

Our results show a significant difference regarding negative birth outcomes associated with age. As maternal age decreases, the risks of very preterm delivery, preterm delivery, very low birth weight, and low birth weight becomes significantly higher.

This study has some important limitations. These data are new, and there are some missing data and some births were misreported, especially in the first two years of its implementation. Gestational age and birth weight are based on birth certificate data, but we are unsure whether this information is a result of recall bias. We observed a problem of heaping, so our estimates of low birth weight could be underestimated. Also, data regarding tobacco and alcohol use were not available in this data set.

Additionally, these data also evidence the strong challenges associated with the prevention, screening, detection and treatment of sexual abuse, most probably associated with such early sexual debut and reproductive experience. No data included in the birth certificate allows tracing for any indicators of sexual violence, such as age of the partner/father (when available). However, according to the definition of legal age for sexual consent in Mexico, all these pregnancies should be considered, by default, as results of sexual abuse, and screened and treated as such.

This analysis allowed us a closer approximation to the reality of a group of women that has been invisible in demographic surveys: adolescents under age of 15. Additional and more accurate policies are required to attend this age-specific group, traditionally ignored.
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