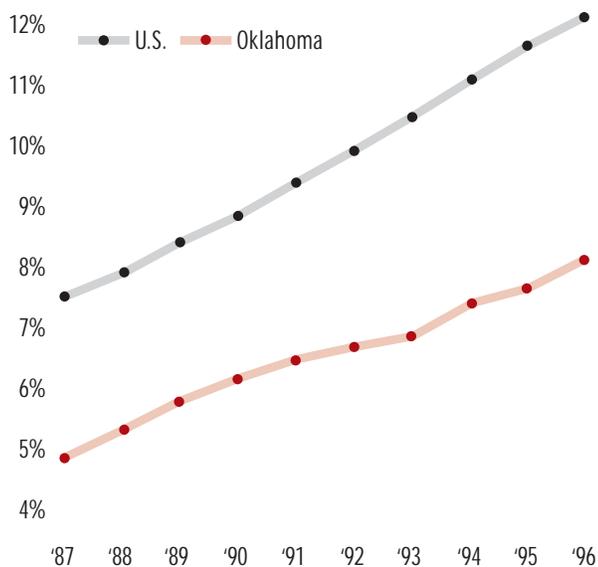


First Time Mothers Age 35 and Older in Oklahoma

Over the 10-year period between 1987 and 1996, the number of women 35 years of age or older who gave birth rose by 62% in Oklahoma. Also, the proportion of women age 35 or older giving birth rose 67%. Nationally, during this period, the number of births to older women rose by 60% and the proportion of births to older mothers rose 63% (Figure 1). Furthermore, the number of first births to women age 35 or older more than doubled in Oklahoma, from 353 in 1987 to 692 in 1996. This report will compare and contrast older first-time mothers with younger first-time mothers. Because of clear differences in outcomes and socio-demographic variables between older first-time mothers and older mothers who have given birth before, this report will focus on a comparison of younger and older first-time mothers with live births, specifically comparing Oklahoma with previous research.

Figure 1
Percent of Births to Mothers Age 35 or Older by Year of Infants Births



According to a recent study, older women have significantly higher risk of low birth weight, pre-term delivery, intrauterine growth retardation, abruptio placentae, and cesarean section than women age

20-29 years.^{1,2} Pre-eclampsia, diabetes, and high blood pressure are also more common among older mothers.² Older women are also more likely to have multiple births: i.e., twins or triplets.^{2,4} Finally, there is an increased risk of congenital abnormalities among the infants of older mothers.² While risks for certain adverse outcomes are higher for women 35 years and older, the majority of infants born to these women are healthy. In fact, older mothers appear to have some advantages that younger mothers may not. As will be shown in this report, they are less likely to live in poverty, more likely to have a higher education, and more likely to receive early and satisfactory prenatal care.

Among women delivering a live birth in Oklahoma

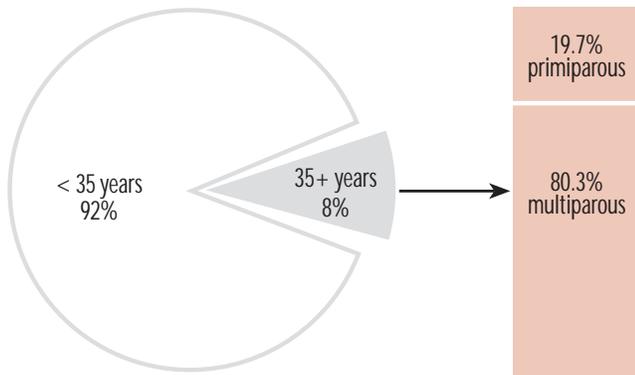
- First-time mothers age 35 or older are 1.4 times more likely to have an intended pregnancy than younger mothers age 20-29.
- 75% of first-time mothers age 35 or older have some college education compared to one-half (52%) of first-time mothers age 20-29.
- Only 8% of first-time mothers age 35 or older live in poverty compared to 23% of first-time mothers age 20-29.
- 96% of first-time mothers age 35 or older receive first trimester prenatal care compared to 86% of first-time mothers age 20-29.
- Older first-time mothers (age 35 or older) are 1.8 times more likely to have a cesarean delivery than younger first-time mothers (age 20-29).
- First-time mothers age 35 or older are 1.8 times more likely to deliver a low birth weight baby than first-time mothers age 20-29.
- Nearly all (99%) of older first-time mothers (age 35 or older) are satisfied with the time the medical practitioner spent with them during their appointments compared to 88% of younger (age 20-29) first-time mothers.

Background and Methods

For this report, we define older mothers as women age 35 or older at the time they gave birth. Eight percent of women delivering a live birth in 1996 were age 35 or older; of these, 19.7% (n=692) were primiparous, or first-time, mothers.³

The data for this report is from the Oklahoma Pregnancy Risk Assessment Monitoring System (PRAMS). This report studies the demographic and lifestyle characteristics associated with the age of the mother and number of previous births. PRAMS respondents with no previous births were stratified into two categories: primiparous mothers age 20-29 and primiparous mothers age 35 or older. Demographic characteristics, health care attitudes, healthcare-seeking behaviors, satisfaction of care, source of care, and outcomes between younger and older first time mothers are compared. Frequency distributions and p-values are presented when significant. Additionally, risk ratios are presented in the narrative for selected variables. All differences discussed in the narrative are significant at an $\alpha = 0.05$ level, unless stated otherwise.

Figure 2
1996 Oklahoma Live Births



Results

Many significant differences were observed between older and younger primiparous mothers. Fewer than 8% of live births to older primiparous women were to non-white mothers, compared to 18% of live births to younger (age 20-29) primiparous women (Table 1). Older mothers generally have higher levels of education than younger mothers; 75% of older mothers had some college education compared to one-half (52%) of younger mothers. Older primiparous mothers were less likely to live in poverty (8% v. 23%), yet were more likely,

although not statistically significant, to consider themselves as “in debt over their heads” during the 12 months before delivery (18% v 10%) compared to younger primiparous mothers.

Older (age 35 or older) primiparous mothers were more likely to report being married when their pregnancies were conceived (79% v 65%), and, although not statistically different, they were more likely to be married at the birth of their children (85% v 77%) (Table 1). Older mothers were also less likely to report being divorced or separated during the 12 months before delivery (8% v 18%) than younger mothers. Moreover, older mothers were 1.4 times (83% v 59%) more likely to have an intended pregnancy than younger mothers.

Table 1
Socio-Demographic Characteristics, Primiparous Women Delivering a Live Birth by Maternal Age, Oklahoma 1988-95

characteristics	20-29	35+ primiparous	P
white	82.4	92.8	0.004
college education	52.0	74.6	0.001
< 100% FPL	22.8	8.1	0.001
in debt over their heads ¹	10.4	18.0	NS
married at conception	64.7	78.6	0.020
married on birth certificate	77.0	85.4	NS
divorced/separated ¹	18.2	8.0	0.006
pregnancy intended	59.2	83.0	<0.001

¹ during 12 months before delivery

PRAMS is a population-based survey of Oklahoma women with a recent delivery. Analysis weights were applied to adjust for selection probability and non-response. By using weighted analysis, researchers can make strong statements about the preconception and perinatal periods for the entire population of women in Oklahoma delivering a live birth. Thus, state-specific decisions on policy and program development can be made. A stratified systematic sampling approach is used to select approximately 200 new mothers each month from the state's live birth registry. Up to three mailed questionnaires are used to solicit a response. Telephone interviews are attempted for non-respondents. Data for this report reflect live births occurring between April 1988 and March 1995. The response rate was 71%. This analysis includes information collected from 11,750 mothers and uses information on 4,576 primiparous mother of which 178 were age 35 or older and 2,656 were age 20-29. The following are the sample sizes for the questions used in this analysis: Mother's Race 2,811; Education of Mother 2,767; Federal Poverty Level 2,331; Indebtedness 2,762; Marital status at conception 2,802; Marital Status on the Birth Certificate 2,832; Divorce or separation 2,768; Intention of Pregnancy 2,665; Trimester Prenatal Care Began 2,756; Kessner 2,592; Prenatal Care as Early as Desired 2,797; As much Prenatal Care as Desired 2,770; Prenatal Care location 2,706, Prenatal Care Payer 2,738; Delivery Payer 2,769; Medicaid 2,823; Satisfaction with wait time 2,737; Satisfaction with time 2,736; Satisfaction with treatment 2,724; Delivery method 2,799; Hospitalization for vaginal bleeding, diabetes, high blood pressure or premature labor 698, Birth Weight 2,697; Gestational Age 2,598; Multiple births 2,834; and Admission to Neonatal ICU 2,762. All data represent state estimates.

Prenatal Care Seeking Behaviors

Ninety-six percent of older primiparous mothers received first trimester prenatal care compared to 86% of younger primiparous mothers (Table 2). Older mothers were more likely to enter prenatal care as early as they wanted (89.5% v 80.3%) and more likely to receive as much prenatal care as they desired (98.8% v 91.7%) compared to younger mothers (Table 2).

Table 2
Prenatal Healthcare-Seeking Behaviors, Primiparous Women Delivering a Live Birth by Maternal Age, Oklahoma 1988-95

	primiparous		P
	20-29	35+	
first trimester prenatal care	85.8	96.1	<0.001
adequate prenatal care (Kessner)	79.9	88.4	NS
got prenatal care as early as desired	80.3	89.5	0.011
got as much prenatal care as desired	91.7	98.8	<0.001

Older primiparous mothers were more likely to receive prenatal care from a private MD or HMO (87% v 65%), and less likely to receive prenatal care from a hospital or health department clinic (10% v 21%; Table 3). Older primiparous mothers were more likely to pay for both their prenatal care (68% v 55%) and delivery (73% v 56%) using a group insurance compared to younger primiparous mothers (Table 3). Conversely, older mothers were less likely to pay for prenatal care or delivery through Medicaid (17% v 28%; Table 3).

Table 3
Location and Payment of Prenatal Care, Primiparous Women Delivering a Live Birth by Maternal Age, Oklahoma 1988-95

	primiparous		P
	20-29	35+	
hospital or health department	20.8	10.0	<0.001
private MD/HMO (prenatal care)	65.1	87.3	<0.001
group insurance (prenatal care)	55.5	68.3	0.052
group insurance (delivery)	56.4	72.7	0.011
Medicaid used for payment of prenatal care or delivery	27.8	16.8	0.040

While the numbers of women not satisfied with particular aspects of their prenatal care is quite small among older primiparous mothers, there does appear to be differences between older and younger primiparous mothers in satisfaction of care. Older primiparous mothers are more likely to be more satisfied with the amount of time that they have to wait to see their medical practitioner (91% v 80%; Table 4). They are also more likely to be satisfied with the time the medical practitioner spent with them (99% v 88%) and the way the staff treated them (98% v 92% Table 4). Why older primiparous mothers are also more satisfied with their care is not available from this data set.

Table 4
Satisfaction of Prenatal Care, Primiparous Women Delivering a Live Birth by Maternal Age, Oklahoma 1988-95

	primiparous		P
	20-29	35+	
satisfied with amount of waiting time after arrival for visits	80.1	91.3	0.010
satisfied with time doctor or nurse spent with you during your visit	88.2	99.0	<0.001
satisfied with the understanding and respect the staff showed toward the mother as a person	93.0	97.5	0.054

Complications and Outcomes

Older primiparous mothers were 1.8 times more likely to have a cesarean delivery than younger primiparous mothers (Table 5). While older mothers were more likely to report complications such as vaginal bleeding, diabetes, high blood pressure, and premature labor in previous studies, this data does not confirm this association (Table 5). However, the sample size was extremely small for these relatively rare events. Additionally, the sample size is too small to show significant differences of multiple births by parity.

Despite the socio-economic advantages, such as better education and more income, as well as the benefits of early and adequate prenatal care among primiparous mothers age 35 or older, these mothers were 1.8 times more likely to have a low birth weight birth than younger primiparous mothers (Table 6).

Table 5
Selected Pregnancy Complications by Parity and Maternal Age

pregnancy complications	primiparous		P
	20-29	35+	
cesarean section	25.4	45.5	0.005
vaginal bleeding	8.9	2.1	NS
diabetes	5.7	4.8	NS
high blood pressure	20.3	37.2	NS
premature labor	32.9	28.2	NS
multiple birth delivery	0.7	0.7	NS

Table 6
Selected Birth Outcomes by Parity and Maternal Age

birth outcomes	primiparous		P
	20-29	35+	
low birth weight (<2500 g)	5.8	10.5	<0.001
pre-term (<37 weeks)	8.4	12.2	NS
NICU admission	9.9	8.6	NS

Discussion

Mothers who gave birth to their first children at age 35 or older had an increased risk of having a cesarean delivery, multiple birth delivery, and a low birth weight infant. In contrast to studies, we observed no statistically significant differences between maternal complications and the outcomes of older and younger primiparous mothers, although these differences have been well established in numerous other works.^{1,2,3} Older primiparous women are more likely to have some college education, be married at conception, live above the poverty level and have an intended pregnancy. Additionally, they were better off when considering various aspects of prenatal care. Older mothers were more likely to enter prenatal care during the first trimester, to enter care as early as they preferred and receive as much care as they wanted. They were more likely to go to a private medical doctor or a health maintenance organization (HMO) for prenatal care and to have group insurance to pay for both prenatal care and delivery. In other words, older mothers were less likely to have Medicaid pay for either their prenatal care or delivery. They were also more satisfied with the care they received.

Older mothers, however, merit attention despite the socio-economic advantage and increased prenatal care because they appear to be at increased risk of poor birth outcomes and complications. Additionally, this group of women is becoming an increasingly larger proportion of our childbearing population. Thus, it is recommended that health providers monitor this group for the potential health problems seen in this and other studies. However, it is important to realize that this group also has many advantages that will aid health workers in assisting them. Finally, it is important that health providers realize that not all older women giving birth for the first time have these advantages, and women need to be assessed as individuals to determine other social and economic conditions that may impact their pregnancy.

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