Racial Differences in Prenatal Care Use in the United States: Are Disparities Decreasing?

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Objectives. We examined trends and racial disparities (White, African American) in trimester of prenatal care initiation and adequacy of prenatal care utilization for US women and specific high-risk subgroups, e.g., unmarried, young, or less-educated mothers.

Methods. Data from 1981–1998 US natality files on singleton live births to US resident mothers were examined.

Results. Overall, early and adequate use of care improved for both racial groups, and racial disparities in prenatal care use have been markedly reduced, except for some young mothers.

Conclusions. While improvements are evident, it is doubtful that the Healthy People 2000 objective for prenatal care will soon be attained for African Americans or Whites. Further efforts are needed to understand influences on and to address barriers to prenatal care. (*Am J Public Health.* 2002;92:1970–1975)

In 1985 the Institute of Medicine promoted the enrollment of all women into a system of prenatal care as a national policy initiative to improve birth outcomes in the United States.[1] To reach this goal by lessening the financial barriers to prenatal care, Congress enacted legislation in the mid- and late 1980s that incrementally expanded Medicaid eligibility to previously ineligible pregnant women.[2,3] State-level evaluations of these policies revealed increases in Medicaid enrollment, accompanied by both earlier initiation and more adequate utilization of prenatal care.[4,5] Similarly, national assessments of prenatal care use over the last 2 decades reveal ongoing improvements in the early entry and regular receipt of prenatal care.[6]

Although short of the Healthy People 2000 and Healthy People 2010 objectives of 90% of US women initiating care in the first trimester,[7] this proportion increased to more than 83% in 1999.[8] Adequate use of prenatal care as measured by both the month that care began and the number of visits received (adjusted for gestational age at delivery) has also increased, while the percentage of women with no prenatal care or a late start of care has declined.[6,9]

In spite of the enthusiasm generated by these advancements in prenatal care use, concerns have been raised that not all racial, ethnic, and socioeconomic groups have equally realized these gains. Some writers have suggested that women at greatest risk of poor pregnancy outcomes had less improvement in their access to and use of prenatal care.[10] African American women and women with less education have been highlighted as specific groups for which trends toward more favorable prenatal care use have lagged, particularly for intensive utilization of care.[10] Further, one report has suggested that the discrepancy in late or no prenatal care use between Whites and African Americans has not changed over the last decade, a period when racial disparities in infant mortality continued to grow.[9]

The objectives of this study are to (1) examine trends in early, adequate, and intensive use of prenatal care by African American and White women in the United States; (2) establish whether previously existing racial disparities in early and adequate use of prenatal care have been modified; and (3) determine whether improvement in intensive use of prenatal care has been racially disproportionate. In addition, for each racial group, we investigated the prenatal care trends of women with high-risk factors, e.g., young maternal age, low education, and single marital status. Regardless of ethnic or racial group, women with these maternal characteristics have been identified as having less adequate prenatal care use and are at greater risk of low birthweight, preterm delivery, and other poor pregnancy outcomes.[11,12]

METHODS

The study data were drawn from the National Center for Health Statistics' natality files for 1981–1998. More than 60 million birth certificate records were available for analysis over the 18-year study period. For the years 1985–1998, data were based on 100% of birth certificates from the 50 states and the District of Columbia. For 1981–1984, data were based on 100% of births in most states and a 50% sample of births in a few states, which were then weighted to reflect 100% coverage. Information on the number of prenatal visits was not available for New Mexico for 1981 and for California from 1981 through 1988. During the period from 1981 through 1985, New Mexico also did not report the date of the mother's last normal menstrual period. These 2 states were excluded from analysis for the years when data was missing. For the years 1989–1998, we examined trends in prenatal care both including and excluding these states and found negligible differences. Therefore, we included all states for the years 1989–1998.

After selecting single live births to US resident mothers who were either White or African American, we examined the trimester in which care began as well as the Revised Graduated Index of Prenatal Care Utilization (R-GINDEX) and Adequacy of Prenatal Care Utilization Index (APNCU).[13–15] These indexes of adequacy of prenatal care use are based on the month that care began and the number of visits, adjusted for gestational age, and include the categories "intensive/adequate-plus," "adequate," "intermediate," "inadequate," "no care," and "missing data."

In this study, we examined the adequate and intensive care categories of the R-GINDEX and the intensive/adequate-plus category of APNCU. The adequate care use category of the R-GINDEX accurately reflects the American College of Obstetricians and Gynecologists' (ACOG) recommended schedule of visits, both for starting care in the first trimester and the number of visits.[14]

R-GINDEX and APNCU categorize intensive use of care differently. The intensive category for R-GINDEX includes women who had an excessively large number of prenatal care visits (approximately 1 standard deviation beyond the mean number of visits) given their gestational age at delivery and the month that prenatal care began. The intensive group for APNCU consists of women who have an observed-to-expected prenatal care visit ratio of at least 110% of the ACOG-recommended visits. The R-GINDEX intensive use category is more restrictive than the APNCU and identifies women with the most excessive number of visits. The APNCU category gives greater focus to mothers who deliver preterm and receive 1 or more visits than are recommended. Detailed descriptions of these indexes are available elsewhere.[13–15]

Gestational age in completed weeks was computed from the interval between the date of the last normal menstrual period (LMP) and the date of birth. For birth records missing the entire date of LMP, a gestational age value was imputed when there were valid data for month and year of LMP. Where LMP was unknown or inconsistent with birthweight, the clinical estimate of gestation was used if consistent with birthweight for births from 1989 through 1998.[16] Birth records with inconsistent or missing values for the period of gestation after imputation, the month prenatal care began, or the number of prenatal visits were excluded from our analysis in the calculation of each index. Over the study period, birth records with 1 or more missing values ranged from 5% to 7% annually.

We examined 3 sociodemographic groups considered at higher risk for adverse pregnancy outcomes: women with low educational attainment (<12 years of education completed), young women (<18 years), and unmarried women. The racial categories, White and African American, were based on the mother's self-reported race. Other race and ethnic groups were not examined because data for Hispanic women were not identifiable for many states during the early part of the study period and there were too few women in other racial groups to establish stable trends in the prenatal care use categories of interest.

We examined trends and the percentage change in prenatal care utilization for Whites and African Americans by means of 2-year increments. For the total population and for our young, unmarried, and low education subgroups, we calculated the White–African American ratio for each prenatal care measure to assess reductions in racial disparities in prenatal care use. We also explored trends by race in the percentage of young, unmarried, and low-education mothers.

Except as indicated above, findings were based on the complete population of singleton live births to US resident mothers. Therefore, standard errors or other sample statistics are not presented for point estimates.[17]

RESULTS

Table 1 reports the 4 prenatal care measures by race of mother for the years 1981 through 1998, aggregated in 2-year increments. The proportion of mothers with adequate use of prenatal care increased for both race groups, from 33.6% to 50.2% for Whites and from 26.9% to 44.0% for African Americans. These trends represent a nearly 50% improvement for Whites over this period and nearly a 64% improvement for African Americans (Table 2). The percentages of women beginning care in the first trimester also increased, from 80.1% to 84.8% for Whites, and 61.1% to 72.8% for African Americans. Although the percentages of women with intensive utilization increased markedly for both racial groups, African American women continued to exhibit more

TABLE 1—Prenatal Care Use by Year of Birth and Race of Mother: Single Live Births to US Resident Mothers, 1981–1998

	Total Births		Adequate Use, %[a]		Care Initiated in 1st Trimester, %		APNCU Intensive Use, %[b]		R-GINDEX Intensive Use, %[b]	
Year of Birth	White	AA	White	AA	White	AA	White	AA	White	AA
1981/1982	4 652 840	899 747	33.6	26.9	80.1	61.1	17.6	19.7	3.40	3.57
1983/1984	4 635 695	900 607	35.7	28.1	80.3	61.2	18.8	20.7	3.76	3.96
1985/1986	4 838 872	970 472	38.2	30.3	80.0	61.3	20.7	22.6	4.40	4.66
1987/1988	4 852 230	1 025 248	40.4	31.5	80.2	60.8	22.2	23.6	5.08	5.18
1989/1990	6 074 761	1 233 834	41.4	32.3	79.3	60.5	23.4	24.3	5.57	5.72
1991/1992	6 045 296	1 228 995	43.1	34.5	80.3	63.0	24.7	25.6	5.71	5.83
1993/1994	5 869 815	1 175 059	46.0	38.1	82.4	67.2	26.5	27.4	6.00	6.01
1995/1996	5 753 200	1 076 720	47.8	41.5	83.9	71.0	27.8	29.2	6.37	6.50
1997/1998	5 728 977	1 085 159	50.2	44.0	84.8	72.8	29.5	30.7	6.58	6.83

Note. AA = African American; R-GINDEX = Revised Graduated Index of Prenatal Care Utilization; APNCU = Adequacy of Prenatal Care Utilization Index.
[a]Adequate use of prenatal care is based on the R-GINDEX.[14]
[b]Intensive use of prenatal care is based on the R-GINDEX[14] and the APNCU.[15]

TABLE 2—White–African American Ratios of, Percentages of, and Percentage Change in Prenatal Care Use Index Measures by Risk Group and Race of Mother: Single Live Births to US Resident Mothers, 1997–1998

	Total		Young Age (<18y)		Low Education (<12y)		Unmarried	
	White	AA	White	AA	White	AA	White	AA
R-GINDEX Adequate Use[a]								
W/AA Ratio[b]	1.25/1.14		1.07/1.13		1.20/1.13		0.90/1.02	
Percentage, 1997/1998	50.2	44.0	36.8	32.5	37.5	33.2	40.4	39.4
Percentage change, 1981/1982–1989/1990	23.1	20.1	33.8	32.4	11.6	20.2	39.4	24.4
Percentage change, 1981/1982–1997/1998	49.3	63.6	95.5	86.0	61.7	72.4	107.2	81.0
Care Initiated in 1st Trimester								
W/AA Ratio[b]	1.31/1.16		1.18/1.17		1.23/1.14		0.99/1.07	
Percentage, 1997/1998	84.8	72.8	66.4	56.9	69.7	61.0	72.3	67.6
Percentage change, 1981/1982–1989/1990	–1.0	–1.0	3.9	3.4	–6.7	–4.2	10.7	0.2
Percentage change, 1981/1982–1997/1998	6.0	19.2	30.7	32.5	12.9	21.6	37.4	27.2
APNCU Intensive Use[c]								
W/AA Ratio[b]	0.90/0.96		0.87/1.02		0.94/1.02		0.79/0.95	
Percentage, 1997/1998	29.5	30.7	26.5	26.0	25.6	25.2	27.1	28.5
Percentage change, 1981/1982–1989/1990	32.9	23.4	34.4	24.5	20.6	20.6	37.6	23.9
Percentage change, 1981/1982–1997/1998	67.7	56.3	83.8	57.3	68.2	54.9	94.4	62.0
R-GINDEX Intensive Use[c]								
W/AA Ratio[b]	0.95/0.96		1.02/1.07		1.07/1.07		0.92/0.98	
Percentage 1997/1998	6.6	6.8	5.8	5.4	5.6	5.3	6.1	6.2
Percentage change, 1981/1982–1989/1990	63.8	60.2	76.6	84.7	60.6	67.7	72.9	68.4
Percentage change, 1981/1982–1997/1998	93.5	91.3	110.2	101.5	99.3	99.6	116.0	103.0

Note. W = White; AA = African American; R-GINDEX = Revised Graduated Index of Prenatal Care Utilization; APNCU = Adequacy of Prenatal Care Utilization Index.
[a]Adequate use of prenatal care is based on the R-GINDEX.[14]
[b]White–African American ratios of the prenatal care index measures for 1985–1987 and 1995–1997.
[c]Intensive use of prenatal care is based on the R-GINDEX[14] and the APNCU.[15]

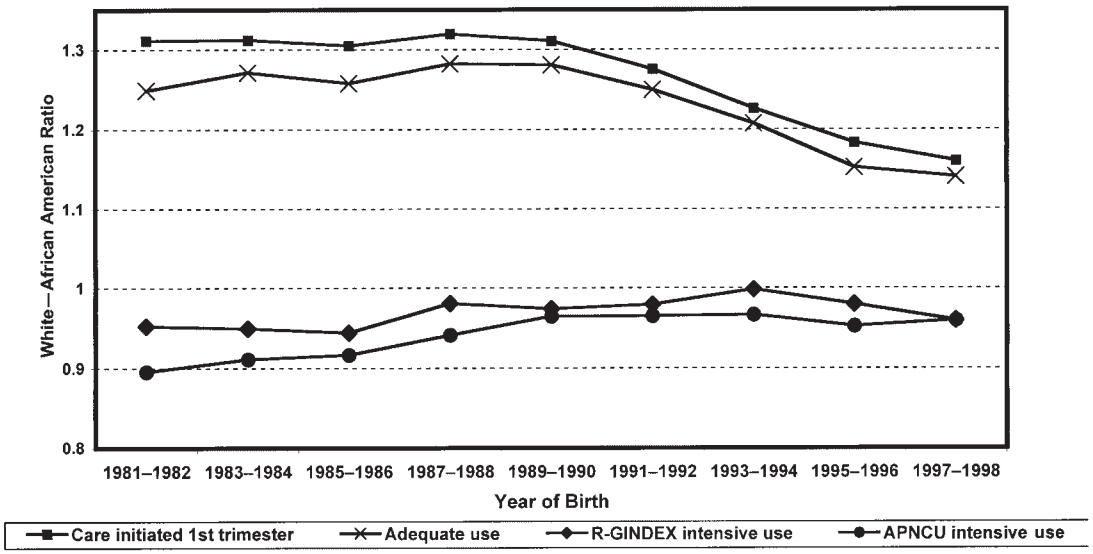
intensive use of care throughout the study period.

Overall, the adequate utilization gap between African American and White women narrowed steadily through the 1980s and 1990s (Table 2). The percentages of mothers starting prenatal care in the first trimester rose for both race groups, although more dramatically for African Americans (19%, with all the increase occurring after 1990) compared with Whites (6%); the racial gap for this measure was also reduced. A different pattern emerged for intensive utilization, although with similar result. The percentage increase in intensive use of care was greater for Whites compared with African Americans, allowing Whites to narrow the gap. Figure 1 illustrates that the White–African American ratio for adequate and first trimester care initiation has been moving toward unity, as has the ratio for intensive utilization.

Changes in the proportion of the study population considered at higher risk for adverse pregnancy outcomes were dramatic (Table 3). While the proportion of births to young mothers declined slightly for Whites, from 4.07% to 3.99%, the proportion among African Americans declined 19%, from 11.7% to 9.5%. There was also a noteworthy decline (22.5%) in the proportion of births to African American women with less than 12 years of education. The proportion of births to unmarried mothers increased from 10.7% to 25.9% for Whites and from 57.2% to 69.0% for African Americans.

Changes in the proportion of these high-risk populations underscore important trends for the various prenatal care measures. Table 2 reveals that the overall trend toward amelioration of racial disparities is not evident in all the high-risk sociodemographic subgroups we examined. The ratio of White to African American adequate utilization among young mothers has been moving steadily away from unity, while the advantage that African American youths had in intensive utilization (APNCU) has disappeared.

Some progress is evident in reducing disparities in prenatal care use among women with less than a high school education (Table 2). African Americans made gains relative to Whites for early and adequate use of care. Conversely, Whites achieved a greater percentage increase in intensive utilization during this period (APNCU). A different trend in prenatal care use emerges for unmarried women. Although in 1997–1998 the overall percentages of unmarried White (40.4%) and African American (39.4%) women with adequate use of care are nearly comparable, the percent increase since 1981–1982 was greater for Whites: 107% vs 81%. The patterns for R-GINDEX and APNCU intensive



Note. R-GINDEX = Revised Graduated Index of Prenatal Care Utilization; APNCU = Adequacy of Prenatal Care Utilization Index.

Figure 1—White–African American Ratios for Selected Prenatal Care Indices: Single Live Births to US Resident Women, 1981–1998

utilization measures were similar to that of adequate utilization. White unmarried women have the greatest percentage increase in intensive use of prenatal care, which for this indicator has reduced the racial disparity. White unmarried women also had a greater increase in first trimester care compared with African American unmarried women (37.4% to 27.2%). The White–African American ratio for first trimester care has grown since 1981–1982, while the ratios of the other prenatal care measures indicate less disparity.

DISCUSSION

During the 1980s and 1990s, prenatal care utilization improved for both Whites and African Americans in the United States. For both racial groups, improvements were observed for every measure of prenatal care use (i.e., early, adequate, and intensive use of care) examined by this study. Moreover, the racial disparity between Whites and African Americans in prenatal care use narrowed. Particularly during the 1990s, African Americans were steadily catching up to Whites in terms of early and adequate use of prenatal care. Over the same time, Whites were approaching the same level of intensive use of care as African Americans.

The narrowing of racial disparities in early and adequate use of care is encouraging, although the reasons for this trend are open to speculation. National policy emphasis on and commitment to the reduction of racial disparities in health outcomes may have heightened already existing efforts to remove economic barriers to care.[18] Efforts to promote more culturally competent care and reduce racial disparities in the content of care may also have had an impact on racial differences in prenatal care use.[19] However, our data reveal that the overall trend toward less racial disparity in prenatal care use is not occurring in every sociodemographic subgroup. Racial disparities in adequate use are increasing for young mothers. Greater emphasis on follow-up of African American teens once enrolled in care may be a promising avenue for stemming this trend.

Trends in racial disparities in adequate prenatal care use among unmarried women were distinctive. In the early 1980s, unmarried White mothers were less likely than unmar-

TABLE 3—Percentage of Mothers in Each Risk Group, by Race of Mother and Year: Single Live Births to US Resident Mothers, 1981–1998

	White			African American		
Year of Birth	Young Age (<18y)	Low Education (<12y)	Unmarried	Young Age (<18y)	Low Education (<12y)	Unmarried
1981/1982	4.1	19.1	10.7	11.7	35.1	57.2
1983/1984	3.7	17.9	11.8	11.1	33.7	59.6
1985/1986	3.6	17.3	13.7	10.6	31.8	61.4
1987/1988	3.6	17.0	15.5	10.8	31.0	63.6
1989/1990	3.6	21.7	19.5	10.3	30.0	65.8
1991/1992	3.8	22.2	21.9	10.4	30.0	67.8
1993/1994	4.1	21.7	24.2	10.8	29.4	69.2
1995/1996	4.2	21.4	25.3	10.7	28.3	69.6
1997/1998	4.0	21.1	25.9	9.5	27.2	69.0

ried African American mothers to have an adequate number of visits, but they have since caught up. Over the same period, the increase in the proportion of births to unmarried mothers has been greater for Whites compared with African Americans. Births to youths from both racial groups were not increasing and births to low-education mothers are declining for African Americans and only slightly increasing for Whites. The greater increase in White unmarried mothers largely stems from births to unmarried adult women with average or better educational attainment and other socioeconomic, attitudinal, and behavior characteristics that may influence their prenatal care use.

The overall greater intensive use of care among African Americans compared with Whites is noteworthy, although it must be stressed that the proportion of mothers who require an intensive number of prenatal care visits has increased dramatically for both groups. In many states, African Americans are more likely than Whites to deliver in tertiary care hospitals[20] and as a result may be more likely to be referred to available specialists, which may lead to additional visits. Further, African Americans are known to have higher risks of adverse pregnancy outcomes,[21] which might explain their traditionally higher proportion of intensive prenatal care use. Nevertheless, the disproportionately higher increase in intensive use of care among Whites compared with African Americans may reflect the relatively higher increases in both preterm and multiple birth rates for Whites over the last decades.[22–24]

For young and low-education mothers, the finding that the intensive use of care among Whites has recently become higher than among African Americans indicates a trend that should be closely monitored. If the current growing propensity toward intensive use of prenatal care among White young, low-education, and unmarried mothers continues, the White–African American ratios for this measure observed throughout the 1980s may reverse, with Whites exhibiting the greater proportion of intensive use of care. Further investigation of the prenatal care use patterns of these sociodemographic groups will be needed to determine the extent to which this trend reflects racially disparate changes in medical risk, health care access, or both.

A number of explanations have been proposed for the changing patterns of prenatal care in the United States.[6] In addition to increases in the proportion of high-risk mothers (e.g., multiple or preterm births),[22–25] other suggested precursors to the rise in the proportion of women with intensive prenatal care use, indicating the receipt of an unexpectedly large number of prenatal care visits, include advances in obstetric diagnostic technologies (e.g., ultrasound) and the development of perinatology as a specialty.[6] Litigation in the obstetric field and accompanying increasingly vigilant practice patterns may have also resulted in more frequent prenatal care visits due to more referrals to maternal-fetal specialists.[6] Further, the expansion of Medicaid eligibility for pregnant women that improved access to and funding for comprehensive prenatal care may have increased both the early and adequate use of prenatal care and the intensive use of care for Medicaid-eligible women, who are disproportionately at higher risk of adverse pregnancy-related complications and outcomes.[6] Studies of the impact of the Medicaid expansion have demonstrated increased use of prenatal care.[4,5,26,27]

The accuracy and completeness of reported gestational age and prenatal care indicators may have changed over the study period and are a study limitation. The role of changes, errors, and omissions in prenatal care reporting on trends has been previously examined and was not found to be a major biasing factor.[6] Nevertheless, variations among sociodemographic groups in the completeness of reporting on vital records may have some effect on our findings, although are not believed to appreciably alter the conclusions.[28–31] Finally, measures of prenatal care entry and number of visits do not encompass the content and quality of care, which may in turn influence utilization.[32] The few studies in this area suggest that the recommended prenatal care medical procedures and health behavior messages are not being universally provided and racial differences in their provision do exist.[33,34]

Although generally racial disparities in prenatal care use are declining, future studies will be needed to assess the extent to which disparities exist for other racial, ethnic, and high-risk groups. At this point, it is not realistic to suggest that the Healthy People 2000 objective of 90% of pregnant women starting prenatal care in the first trimester will soon be attained for African Americans or even Whites.[7] Further efforts will be needed to better understand the factors influencing the use of prenatal care and related preventive health care services and to address the barriers that exist to their access and use.[35] Universal health care coverage for all pregnant women, ongoing education of providers regarding cultural factors influencing the use of care, and comprehensive preconception women's health care programs are among the possible programmatic and policy initiatives that could be explored in an effort to reach our national goal related to prenatal care. ■

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Contributors

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Human Participant Protection

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