Comparing Mothers' Reports on the Content of Prenatal Care Received with Recommended National Guidelines for Care

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Synopsis

The Public Health Service's Expert Panel on the Content of Prenatal Care Report in 1989 provided detailed guidelines for the components of each prenatal visit. However, the extent to which women were receiving the recommended care when the guidelines were being formulated has yet to be determined.

The 1988 National Maternal and Infant Health Survey results permit an examination of the proportion of women who reported receiving some of the recommended procedures. Women were asked if they received six of the recommended procedures (blood pressure measurement, urine test, blood test, weight and height taken, pelvic examination, and pregnancy history) in the first two visits, and whether they received seven types of advice or counseling (nutrition; vitamin use; smoking, alcohol, and drug use cessation; breastfeeding; and maternal weight gain) any time during their pregnancy.

Only 56 percent of the respondents said they received all of the recommended procedures in the first two visits, and only 32 percent of the respondents said they received advice in all of the areas. Logistic regression analysis indicated that women receiving their care from private offices were significantly less likely to receive all the procedures and advice than women at publicly funded sites of care. This study suggests that recommendations of the Public Health Service's expert panel were not being met.

PRENATAL CARE IS RECOGNIZED as the cornerstone of our preventive health care system for pregnant women. A recent report by the Institute of Medicine on access to health care in the United States identified the promotion of successful birth outcomes as the first goal of the health care system (*1*). The proposed mechanism for achieving these goals was through improved access to comprehensive prenatal care.

The central rationale for improving access to prenatal care is based on a number of studies indicating that its adequate use is associated with improved birth outcomes (*2–10*). Yet, the pathway by which greater use of care leads to better birth outcomes remains unclear. Most research has concentrated on overall use of prenatal care, not on the content, despite calls for further research in this area (*11*). The inherent difficulties in measuring an area as complex and multifaceted as the components of prenatal care have hindered research. In addition, there are no readily available sources of data on the components of prenatal care.

As a method for establishing criteria to examine the components of prenatal care, the Public Health Service (PHS) convened an expert panel on the content of prenatal care, and published its report in 1989 (*11*). The expert panel's report provided detailed recommended guidelines for the components of each prenatal care visit, based on the weeks of gestation. The recommendations included information on the timing of laboratory tests, examinations, and health promotion activities.

However, the extent to which women were receiving the recommended components of prenatal care at the time that the recommendations were being formulated has yet to be determined. The purpose of

Table 1. Percent of 9,932 women reporting selected first or second visit prenatal procedures and health behavior advice recommended by expert panel on the content of prenatal care

Prenatal service	Weighted percent
Procedure	
Blood pressure	96.1
Urine test	93.4
Blood work	78.5
Weighed and measured	97.8
Physical or pelvic examination	85.5
Health history taken	79.5
Received all procedures	55.5
Health behavior advice	
Take vitamins	97.1
Eat the proper foods	92.9
Try to breastfeed infant	52.8
Alcohol cessation	67.6
Smoking cessation	68.8
Illegal drug use cessation	65.2
How much weight to gain	72.0
Received all advice	31.9

this study is to ascertain the percent of women reporting receipt of the expert panel's recommended procedures and health behavior advice, and to examine differences in receipt of procedures and advice by site of care, health insurance status, and sociodemographic factors. This study can provide a baseline for future evaluation of the effect of the PHS' recommendations on practice. The investigation of variations in the content of prenatal care among health care provision services has heightened relevance in light of health care reform initiatives that spotlight possible standard packages of preventive services for pregnant women.

Methods

The 1988 National Maternal and Infant Health Survey (NMIHS), conducted by the National Center for Health Statistics, provides an opportunity for comparing women's reports on the content of prenatal care to the Public Health Service's recommendations. The NMIHS is a followback survey consisting of three groups: 9,953 women who had a live birth in 1988, 5,332 women who suffered an infant death in 1988, and 3,309 women who had a 1988 fetal loss. The survey was designed to be nationally representative, and the sample was drawn from the 1988 vital records of 48 States and the District of Columbia (South Dakota and Montana were not included); it included an oversampling of African Americans and low birth weight infants. Approximately 50 percent of the respondents sampled were African American, and 30 percent of the infants in the live birth sample were low birth weight. Both married and unmarried women were included. Women were contacted anywhere from 6 to 17 months after the vital event either by mail, phone, or personal interview. Information obtained from the questionnaire was merged with the vital record that was used in the sample selection. The response rate was 74 percent. A more complete description of the NMIHS design has been published elsewhere (*12*).

This investigation included only women in the live birth cohort; women with fetal deaths may not have been in care long enough to have received certain types of advice or procedures from their providers, and many of the women from the infant death cohort had live births prior to the sample year in 1987. The study was also limited to women who reported receiving any prenatal care. After the above exclusions, 9,924 women who had a live birth in 1988 were available for analysis. The study population is nationally representative for 1988 live births only.

The maternal reports on the content of care were measured in two domains. First, respondents in the NMIHS were provided a list of prenatal procedures. They were then asked to indicate which procedures were provided at the first visit and at the second visit. These procedures were a pregnancy test, a blood pressure measurement, a Papanicolaou smear, a urine test, a blood test, maternal weight and height measurements, a physical or pelvic examination, a health history, and an ultrasound or sonogram. The PHS's expert panel's report recommended that six of these procedures (blood pressure, urine test, hematocrit, hemoglobin blood test, maternal weight and height, and health history) be provided at the first pregnancy visit. For purposes of this analysis, women were considered to have received the six initial recommended prenatal care procedures if they reported on the NMIHS that the procedures were given in either the first or second visit, in order to provide more conservative estimates on the percent of women receiving the procedures and compensate for any confusion over whether a pregnancy confirmation visit was the first prenatal care visit. These six procedures were examined individually as well as combined into a dichotomous variable: women who received all six of the procedures (those who fully met the recommended guidelines) versus those who reported fewer than the full amount.

The second domain focused on maternal reports of the advice on health behaviors that they received. Respondents to the NMIHS were asked if they had received any advice or instructions during ANY of their prenatal visits in seven areas: breastfeeding their baby; reducing or eliminating alcohol; reducing or

Table 2. Percent of women reporting selected prenatal procedures recommended by the expert panel in either the first or second prenatal visit, by sociodemographic and health system factors

Characteristic	Number	Recommended procedures					
		Blood pressure	Urine test	Blood work	Weighed and measured	Physical or Health pelvic examination	Health history
Maternal education:							
Less than high school	1,823	94.7	91.7	82.9	95.3	81.5	80.2
High school graduate	3,890	96.0	94.5	77.6	98.2	85.4	80.4
At least some college	4,218	96.7	93.2	77.4	98.4	87.4	78.5
P-value	. . .	.001	<.001	<.001	<.001	<.001	.07
Maternal age (years):							
15–19	1,184	94.4	92.7	82.1	97.8	84.8	84.0
20–29	5,895	95.9	93.0	77.3	97.6	85.7	80.5
30–34	2,071	97.3	93.7	78.4	98.3	85.3	75.4
35 or older	781	96.8	96.8	82.3	97.5	86.4	76.6
P-value	. . .	<.001	<.001	<.001	.76	<.001	<.001
Household income:							
Less than $6,000	1,261	94.4	93.3	82.0	95.8	81.2	80.9
$6,000–$11,999	1,331	94.8	93.3	83.0	97.3	84.5	83.9
$12,000–$17,999	1,225	96.2	92.0	81.6	98.1	84.9	85.4
$18,000–$29,999	2,185	96.7	93.3	75.3	98.5	85.4	78.8
$30,000–$59,999	3,048	96.8	93.8	77.4	98.0	88.4	77.6
$60,000 or more	881	96.2	94.3	74.2	98.2	84.6	71.4
P-value	. . .	.001	.28	<.001	<.001	<.001	<.001
Marital status:							
Married	7,346	96.3	93.6	77.7	98.0	86.4	78.7
Divorced or separated	771	97.9	92.8	80.4	97.5	84.3	83.7
Single	1,814	94.4	92.9	81.0	96.7	82.7	81.2
P-value	. . .	<.001	.40	.004	.002	<.001	.001
Race or ethnicity:							
White	6,779	97.0	93.2	76.2	98.7	87.6	79.3
African American	1,527	95.5	93.8	84.4	96.8	81.3	80.6
Asian	340	90.6	93.0	76.8	92.4	74.2	70.5
Native American	98	96.5	98.6	95.9	96.3	84.3	78.1
Hispanic	1,187	93.2	93.7	83.0	95.4	82.5	82.1
P-value	. . .	<.001	.26	<.001	<.001	<.001	<.001
Parity:							
One	4,154	95.4	93.3	76.6	97.5	85.3	83.4
Two	3,291	96.2	92.9	78.6	97.9	85.9	75.7
Three or more	2,460	97.0	94.2	81.5	98.1	85.7	78.1
P-value	. . .	.007	.14	<.001	.27	.78	<.001
Trimester care began:							
First	7,711	95.9	93.4	77.4	98.0	86.2	78.7
Second	1,612	97.3	93.3	83.5	97.9	83.7	83.9
Third	345	93.3	93.8	78.7	94.6	83.8	81.1
P-value	. . .	.001	.93	<.001	<.001	.02	<.001
Site of care:							
Private office	6,335	96.5	93.3	75.3	98.3	95.5	77.3
Publicly funded site	1,309	94.7	95.1	86.6	96.0	92.6	83.7
HMO	514	95.6	92.5	77.1	98.2	81.9	83.4
Hospital clinic	1,246	96.4	93.6	84.7	97.1	97.6	85.2
Other [1]	413	95.5	92.6	81.9	97.6	87.1	80.4
P-value	. . .	.05	.11	<.001	.001	.09	<.001
Insurance or Medicaid:							
Yes	8,903	96.1	93.4	78.1	97.8	85.9	79.3
No	1,028	96.0	93.6	81.7	97.2	82.3	81.7
P-value	. . .	.90	.81	.009	.21	.002	.07

[1] Other includes work clinic, school clinic, or emergency room.

eliminating smoking; not using illegal drugs such as marijuana, cocaine, or crack; eating the proper foods during pregnancy; taking vitamin or mineral supplements; and gaining an appropriate amount of weight during pregnancy. The expert panel recommended that each of these seven areas of advice be provided at various points during the pregnancy. Each type of advice was examined, as well as combined into a dichotomous variable: women who received all seven types of health behavior advice (those who fully met the recommended guidelines) versus those who reported less than the full amount.

Table 3. Percent of women reporting receipt of health behavior advice recommended by the expert panel during the course of pregnancy, by sociodemographic and health system factors

Characteristic	Number	Take vitamins	Proper food	Breast feed	Alcohol cessation	Smoking cessation	Drug cessation	Weight gain
Maternal education:								
Less than high school	1,823	94.2	87.5	50.2	59.0	69.0	64.4	64.9
High school graduate	3,890	97.4	94.1	52.6	67.5	70.9	66.4	73.0
At least some college	4,218	98.1	94.2	54.1	71.5	66.9	64.5	74.1
P-value	...	<.001	<.001	.01	<.001	.001	.14	<.001
Maternal age (years):								
15–19	1,184	96.6	90.8	52.3	62.3	71.0	70.8	74.7
20–29	5,895	97.0	93.4	53.7	68.7	70.4	66.7	72.9
30–34	2,071	97.8	93.2	51.1	71.1	67.2	61.7	70.7
35 or older	781	97.0	92.2	51.5	58.7	57.9	55.2	64.9
P-value	...	.17	.01	.18	<.001	<.001	<.001	<.001
Household income:								
Less than $6,000	1,261	96.2	91.2	49.0	63.8	70.5	69.3	72.3
$6,000–$11,999	1,331	95.1	90.6	53.3	62.9	69.1	66.7	68.9
$12,000–$17,999	1,225	96.9	93.2	58.2	63.9	68.3	65.7	72.0
$18,000–$29,999	2,185	97.7	92.8	54.1	67.9	69.8	63.6	70.0
$30,000–$59,999	3,048	97.6	94.4	51.4	70.6	68.0	64.1	74.4
$60,000 or more	881	98.4	94.0	51.6	75.4	67.2	64.2	73.1
P-value	...	<.001	<.001	<.001	<.001	.44	.01	.001
Marital status:								
Married	7,346	97.6	93.3	54.1	68.5	68.3	63.7	71.8
Divorced or separated	771	97.2	92.3	51.1	66.8	70.7	68.4	76.6
Single	1,814	95.1	91.5	48.3	64.5	70.4	70.1	70.9
P-value	...	<.001	.02	<.001	.004	.11	<.001	.008
Race or ethnicity:								
White	6,779	97.6	94.0	52.4	70.3	70.7	65.8	74.1
African American	1,527	96.3	92.6	47.4	60.2	64.2	66.1	70.3
Asian	340	96.2	89.7	58.1	58.4	57.2	54.0	62.2
Native American	98	99.3	88.3	65.8	68.4	68.7	69.7	73.0
Hispanic	1,187	95.2	88.7	59.7	64.4	67.2	63.3	65.2
P-value	...	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Parity:								
One	7,346	97.8	94.3	54.8	72.4	72.3	69.4	78.0
Two	771	96.7	92.4	51.5	66.5	67.9	64.3	70.0
Three or more	1,814	96.5	91.4	51.2	61.3	64.7	59.3	64.7
P-value	...	.003	<.001	.004	<.001	<.001	<.001	<.001
Adequacy of prenatal care utilization:								
Adequate	6,069	97.6	94.2	53.3	70.4	69.5	65.9	74.5
Intermediate	2,661	96.6	91.2	52.7	62.1	67.7	63.1	69.7
Inadequate	620	93.3	85.7	47.5	60.3	62.2	63.3	59.7
P-value	...	<.001	<.001	.02	<.001	.001	.03	<.001
Site of care:								
Private office	6,335	97.3	93.2	50.9	67.2	67.7	62.4	71.3
Publicly funded	1,309	97.0	92.0	60.4	67.0	70.1	70.7	74.8
HMO	514	98.4	95.2	57.5	70.3	68.2	66.3	73.2
Hospital clinic	1,246	96.1	91.8	51.1	67.9	71.3	69.2	72.4
Other [1]	413	95.7	93.2	56.0	75.3	77.5	77.5	73.3
P-value	...	.02	.06	<.001	.009	<.001	<.001	.11
Insurance or Medicaid:								
Yes	8,903	97.1	92.8	52.1	67.8	68.6	65.0	72.0
No	1,028	97.0	94.1	58.8	66.6	70.5	66.7	72.1
P-value	...	.79	.13	<.001	.45	.23	.27	.96

[1] Other includes work clinic, school clinic, or emergency room.

The sociodemographic variables (maternal race, education, household income, and marital status) were based on the mothers' responses to the questionnaire. Maternal age and parity were drawn from the birth certificate. The Kessner Adequacy of Prenatal Care Index is an algorithm based on the trimester that care began and number of prenatal visits, adjusted for gestational age (*13*), and is calculated from the associated data drawn from the birth certificate.

Respondents were asked where they received most of their prenatal care. They were given a choice of private physician's or nurse-midwife's office, county

or city health department, community health center, health maintenance organization, work or school clinic, hospital clinic, hospital emergency room, or other. In this analysis, county or city health department and community health center were combined into a variable called publicly funded sites of care. Work or school clinic and hospital emergency room were included in the 'other' category because of small numbers (less than 1 percent).

Women were asked how they paid for their prenatal care visits. The choices were the respondent's or her partner's own income, insurance which the respondent carried or was carried for her, Medicaid, government assistance other than Medicaid (State or local), or other.

Analysis

The data presentation is composed of three sections. First, the prevalence estimates for the recommended prenatal procedures and types of health behavior advice are presented. The estimates are shown for both individual procedures and advice, and the combined optimal utilization variables. Second, the stratified analyses examine the associations between the initial prenatal procedures and prenatal health behavior advice and the potentially differentiating factors, including site of care, health insurance status, and sociodemographic factors. Third, multivariate analyses using weighted logistic regression were performed to isolate the contributions of health service and sociodemographic factors to the receipt of the recommended initial prenatal procedures and advice on prenatal health behaviors.

The analyses for procedures and advice contained the same variables except for the use of the prenatal care variable. The analysis for initial prenatal procedures measured use through the trimester that care began. Since advice could be given throughout pregnancy, the analysis for prenatal health behavior advice measured use through the Kessner Index. All analyses were weighted to account for the survey design and to be nationally representative. All analyses were performed using scaled weights. The scaling factor was the reciprocal of the mean weight; the sum of all the scaled weights is the same as the actual number of observations. Chi-square tests were used to compare statistically the effect of each potential covariate on the reported prenatal content measures.

All multivariate analyses were conducted using the Survey Data Analysis software program which was developed specifically for calculating variances in complex sample surveys (*14*).

'At least 75 percent of the respondents reported receiving the prenatal procedures in either their first or second visit. However, only slightly more than half . . . reported receiving all the recommended procedures.'

Results

Table 1 shows the percent of women in the NMIHS reporting receipt of the prenatal procedures and advice recommended by the expert panel. At least 75 percent of the respondents reported receiving the prenatal procedures in either their first or second visit. However, only slightly more than half the study population reported receiving all the recommended procedures.

There was a much greater disparity in the percent of women reporting receipt of different types of advice. Whereas almost all women said they had been advised about taking vitamins and nutrition, 53 percent received advice on breastfeeding. Only 32 percent of the sample reported receiving all the recommended advice.

Table 2 shows the bivariate association of the recommended prenatal procedures and the sociodemographic, site of care, and insurance status factors. There were distinct patterns depending upon the prenatal procedure. Demographically, there were similar findings for blood pressure, urine test, pelvic examination, and being weighed and measured. Women slightly more likely to receive these procedures were better educated, older, and had more income. On the other hand, women reporting that blood work was done and a health history taken in the initial prenatal visits were more likely to have less education, be younger (except for the 35 or older group for blood work), have lower incomes, and be unmarried.

Site of care shows a similar distinctive pattern depending on procedures. Women receiving their care at a site other than a private physician's office were more likely to have had blood work done and a health history taken. In addition, women who began care in the second trimester were more likely to report receiving these procedures. The insurance status bivariate analysis supports the site of care findings, but it reaches statistical significance only for blood work and health history.

Table 3 indicates the bivariate association between

Table 4. Percent of women reporting receipt of all recommended procedures at first two prenatal visits and prenatal health behavior advice, by sociodemographic and health system factors

Characteristic	Number	Received all recommended procedures		P-value	Received all recommended advice		P-value
		Yes	No		Yes	No	
Maternal education:							
Less than high school	1,823	56.6	43.4		28.4	71.6	
High school graduate	3,890	55.8	44.2		32.3	67.7	
At least some college	4,218	54.6	45.4	.29	32.9	67.0	.001
Maternal age (years):							
15–19	1,184	59.5	40.5		33.9	66.1	
20–29	5,895	55.5	44.5		33.1	68.9	
30–34	2,071	53.0	47.0		30.2	69.8	
35 or older	781	55.4	44.6	.005	23.9	76.1	<.001
Household income:							
Less than $6,000	1,261	58.4	41.6		30.4	69.6	
$6,000–$11,999	1,331	60.0	40.0		30.2	69.8	
$12,000–$17,999	1,225	59.5	40.5		36.8	63.2	
$18,000–$29,999	2,185	53.0	47.0		32.3	67.7	
$30,000–$59,999	3,048	54.8	45.2		30.6	69.4	
$60,000 or more	881	46.9	53.1	<.001	32.9	67.1	.002
Marital status:							
Married	7,346	55.1	44.9		32.1	67.8	
Divorced or separated	771	54.6	45.4		33.4	66.6	
Single	1,814	57.3	42.7	.21	30.1	69.9	.16
Race or ethnicity:							
White	6,779	54.1	45.9		32.4	67.6	
African American	1,527	60.6	39.4		28.5	71.5	
Asian	340	46.3	53.6		27.6	72.4	
Native American	98	66.7	33.3		38.6	61.4	
Hispanic	1,187	58.1	41.9	<.001	33.7	66.3	.004
Parity:							
One	4,154	56.7	43.3		36.1	63.9	
Two	3,291	52.7	47.3		29.8	70.2	
Three or more	2,460	56.9	43.1	.001	27.5	72.5	<.001
Trimester care began:							
First	7,711	54.0	46.0	. . .	. . .	. . .	
Second	1,612	62.5	37.5	. . .	. . .	. . .	
Third	345	56.0	44.0	<.001	. . .	. . .	. . .
Adequacy of prenatal care utilization:							
Adequate	6,069	. . .	. . .		32.7	67.3	
Intermediate	2,661	. . .	. . .		30.0	70.0	
Inadequate	620	. . .	. . .	. . .	27.7	72.3	.004
Site of care:							
Private office	6,335	51.6	48.4		30.0	70.0	
Publicly funded site	1,309	63.7	36.3		36.9	63.1	
HMO	517	55.7	44.3		32.7	67.3	
Hospital clinic	1,246	64.2	35.8		32.3	67.7	
Other [1]	413	60.0	40.0	<.001	42.9	57.1	<.001
Insurance or Medicaid:							
Yes	8,903	55.1	44.9		31.5	68.5	
No	1,028	58.5	41.5	.04	35.6	64.4	.007

[1] Other includes work clinic, school clinic, or emergency room.

receipt of the recommended types of advice and the study variables. Reported advice on taking vitamins and eating the proper foods displayed similar patterns. Generally, women with more education, higher incomes, and married were more likely to receive these types of advice. Although there were statistically significant differences, there were few absolute disparities in the reporting of advice on taking vitamins. The results for breastfeeding, alcohol cessation, smoking cessation, drug cessation (*15*), and weight gain advice (*16*) have been presented in detail elsewhere, but overall they show that for breastfeeding, alcohol cessation, and weight gain, white women, women with more education, and women who were primiparous were more likely to receive these types of advice.

Patterns among certain types of advice also existed by site of care. Women receiving their care at

publicly funded sites were more likely to receive information on breastfeeding, smoking cessation, and drug cessation. Women with adequate use of prenatal care were more likely to receive in all seven areas examined.

Table 4 examines the percent of women who reported receipt of all the recommended prenatal procedures by sociodemographic and health service factors. The bivariate analysis indicates statistically significant differences by maternal age, household income, race-ethnicity, parity, trimester care began, site of care, and insurance status. Teenagers, respondents with lower household incomes, African Americans, first or third parities, women beginning care in the second trimester, those receiving care at a publicly funded site, and those without either insurance or Medicaid were more likely to report receiving all the recommended prenatal procedures. It appeared that one of the greater disparities is between those who received their care from private offices versus those receiving care from either publicly funded sites or hospital clinics.

Table 4 also presents the bivariate analysis comparing the percent of women reporting receipt of all the recommended prenatal health behavior advice by sociodemographic and health service factors. The patterns are somewhat similar to those noted for receipt of all the recommended procedures. Maternal education, age, income, race-ethnicity, parity, site of care, adequacy of prenatal care utilization, and insurance status were all significantly associated with the receipt of advice. Women with more education, teenagers, white and Hispanic women, first parities, women who went to publicly funded sites of care, women who had adequate utilization, and those without insurance or on Medicaid were more likely to report receiving all the recommended advice.

Table 5 presents the adjusted odds ratios from the logistic regression analysis for the risk of not receiving all the recommended prenatal procedures. Only six variables were significant. Women who received their care at either a private physician's office or at a health maintenance organization (HMO), and married women were more likely to report not receiving all the recommended procedures. Women who began care in the second trimester, African Americans, and those with household incomes of $18,000 – $29,999 were more likely to report receiving all the procedures.

The adjusted odds ratios for the risk of not receiving all the recommended prenatal health behavior advice also are presented in table 5. Seven factors were significantly associated with the outcome. Women who received their care from a private physician's office, women older than 34, women with less than a high school degree, African American women, those who had inadequate prenatal care utilization, and second or greater parities were more likely report not receiving all the advice. Those with household incomes of $18,000 – $29,999 were more likely to report having received all the advice compared with women with household incomes of greater than $30,000.

Discussion

Prenatal care has been widely promoted as a means to prevent adverse pregnancy outcomes. Considerable effort has been expended at both State and national levels to improve access to prenatal care services. Notwithstanding the current research evidence in support of these policy initiatives, there are still insufficient data available to explain in detail the relationship that has been observed between the adequate utilization of prenatal care and improved pregnancy outcomes. It has been widely recognized that the content of prenatal care services provided to women is in need of further research.

This investigation examines the extent and variations among maternal reports of health behavior advice and initial prenatal procedures during their prenatal care encounters, and it compares those reports with recommendations of the Public Health Service's expert panel on the content of the prenatal care services. It should be emphasized that the recommendations are not merely well-meaning suggestions. These medical and health education services are believed to influence pregnancy outcomes directly, and they are considered to be essential components of a minimal quality of service. Further, they were recommended only if there was strong empirical evidence that they could influence pregnancy outcomes (*11*).

Based on the responses of this nationally representative sample of women who had a live birth in 1988, it is evident that many women in the United States do not recall receiving the basic initial prenatal practices and health education services recommended by the expert panel. More than two-thirds of these women did not recall receiving advice on all of the recommended topics of health behavior, and nearly 45 percent did not recall receiving all of the recommended initial prenatal procedures. As these data are based on maternal report, some allowance must be made for recall error, which presumably would result in some underreporting of the services received (*17*), although the bias could go in either direction. Women may also be more likely to recall

Table 5. Adjusted odds ratios for risk of not receiving all recommended procedures at first two prenatal visits and all recommended prenatal health behavior advice

Variable	Recommended procedures		Recommended health behavior advice	
	Adjusted odds ratio	95 percent confidence interval	Adjusted odds ratio	95 percent confidence interval
Site of prenatal care:				
Publicly funded site	1.0	. . .	1.0	. . .
Private office	1.59	1.32, 1.93	1.52	1.25, 1.86
Health maintenance organization	1.45	1.06, 1.99	1.36	.97, 1.89
Hospital clinic	1.05	.84, 1.32	1.22	.97, 1.54
Other [1]	1.23	.87, 1.74	.81	.57, 1.14
Maternal age (years):				
20–34	1.0	. . .	1.0	. . .
17–19	.97	.78, 1.20	.95	.76, 1.19
35 or older	.92	.74, 1.14	1.51	1.26, 1.81
Maternal education:				
At least some college	1.0	. . .	1.0	. . .
Less than high school	1.14	.93, 1.39	1.33	1.07, 1.65
High school graduate	1.06	.92, 1.22	1.08	.93, 1.25
Race or ethnicity: [2]				
White	1.0	. . .	1.0	. . .
African American	.83	.72, .95	1.21	1.04, 1.39
Hispanic	.95	.77, 1.17	.94	.76, 1.17
Household income:				
$30,000 or more	1.0	. . .	1.0	. . .
Less than $6,000	.94	.75, 1.16	1.06	.85, 1.33
$6,000–$11,999	.86	.70, 1.06	1.04	.83, 1.30
$12,000–$17,999	.85	.69, 1.04	1.02	.81, 1.28
$18,000–$29,999	.80	.66, .99	.77	.63, .94
Parity:				
One	1.0	. . .	1.0	. . .
Two or more	1.12	.98, 1.27	1.27	1.11, 1.46
Marital status:				
Married	1.0	. . .	1.0	. . .
Not married	1.25	1.06, 1.47	1.04	.87, 1.26
Insurance status:				
Private insurance or Medicaid	1.0	. . .	1.0	. . .
No insurance or Medicaid	.97	.78, 1.20	.96	.77, 1.18
Trimester care began:				
First	1.0	. . .	. . .	. . .
Second	.75	.64, .88	. . .	. . .
Third	.93	.68, 1.22	. . .	. . .
Adequacy of prenatal care utilization:				
Adequate	. . .	. . .	1.0	. . .
Intermediate	. . .	. . .	1.15	.98, 1.34
Inadequate	. . .	. . .	1.28	1.00, 1.62

[1] Other combines the categories of school clinic, work clinic, and hospital emergency room.

[2] Asians and Native Americans excluded from multivariate analysis because of small numbers.

prenatal procedures than advice. It is further possible that women did not know they received a certain prenatal care procedure because it was not explained to them.

Notwithstanding these potential biases, the deficits observed in the receipt of these prenatal care services are sufficiently large to suggest that a problem exists and that efforts to improve this situation are warranted. The finding that 20 percent of women did not report having a health history taken is particularly disturbing as this information is a basic requisite for developing a regimen of quality prenatal care, although women may not realize that a history-taking procedure has occurred or the data may already be in the physician's record.

The site of prenatal care was found to be an important determinant of receiving either health behavior advice or medical procedures. These services were significantly more likely to be omitted if the women received prenatal care services in private offices rather than in publicly funded sites. Women served by HMOs were also more likely not to receive all of the recommended procedures.

The reasons for these findings are open to speculation. Certainly the provision of medical procedures is costly, and economic considerations

may be involved; for example, private offices and HMOs did exhibit lower percentages of women reporting the receipt of blood tests. The availability of auxiliary health professionals to conduct health education sessions may increase the number of women given health behavior advice in public health and hospital-based clinics. And public clinics may be more likely to use a team approach using the expertise of nutritionists, social workers, and trained prenatal nurses. Private physicians have been previously noted to be less likely to deliver health education messages (*18*), and they may be less inclined to provide advice on health behaviors because it is not reimbursable. Another interpretation is that because they know their patients, private physicians tailor their advice; for example, they do not give nonsmoking advice to nonsmokers.

Several studies have noted that women on Medicaid have better birth outcomes at public clinics than at private physicians' offices (*19,20*). Site of care and insurance variations may reflect important differences in the nature and equity of prenatal care procedures and advice offered all women in the United States. In light of the current debate on health care reform, these data raise compelling questions regarding the roles of the private health care sector and the public health sector in the provision of health education and the basic preventive screening tests.

Women were more likely to report the receipt of the recommended initial prenatal procedures than health behavior advice. Although the emphasis on the medicalization of prenatal care may be greatly advantageous to women with high-risk conditions, the majority of women have normal risk pregnancies and need instead a focus on health promotion. Other studies have noted that public health clinics are more likely to provide health behavior advice services than the private sector (*18*).

There was considerable variation among the topics covered in the proportion of women who received health behavior advice. Among the topics in greatest need of attention was breastfeeding. There is evidence that women tend to choose a method of infant feeding during pregnancy, and this circumstance strongly indicates that the promotion of breastfeeding should be a standard feature of quality obstetric care (*21*). One partial explanation for the findings on breastfeeding may be that breastfeeding advice is typically provided later in the pregnancy and women who delivered early may not have had the opportunity to receive this instruction. However, this interpretation would still not account for nearly 50 percent of women not recalling the receipt of instructions on breastfeeding.

Compared with primiparas, multiparous women were at greater risk of not receiving either of the recommended groups of services. This may reflect a belief of providers that previously pregnant women with good outcomes are in less need of these services.

African Americans were less likely to report receiving health behavior advice, but more likely than white women to report receiving the medical procedures. These converse findings amplify previous research in this area and may reflect a complex array of factors (*15*). Racial differences in socioeconomic and medical risk status may influence the provider's perceptions regarding the need for medical procedures for minority patients and the willingness of the insurer to approve payments. At the same time, racial variations in provider-patient interactions in a society largely characterized by white providers may negatively influence the equitable provision of health education. The findings may also indicate a lack of provider training on how to effectively address lifestyle problems among minority women.

This study also suggests that the current conceptualization of the adequacy of prenatal care primarily in terms of utilization is insufficient to understand the full impact of prenatal care on birth outcomes. Given the existing deficits in the content of care, the impact of prenatal care on birth outcomes might be greater if all women had all components of prenatal care. Self-selection of women into prenatal care has been proposed as one determinant of the preferential outcome of women with adequate prenatal care use, and this potential confounding underscores the insufficiency of relying solely on indices of prenatal care utilization to define and evaluate the adequate receipt of prenatal care (*22*). Although these issues remain subject to further research and are relevant topics to consider in policy discussions regarding strategies to improve birth outcomes, they should not obscure the compelling reasons to assure that all women have access to prenatal care services and to assure that these services are of high quality.

Improvements in access to the recommended content of prenatal care await both educational efforts to improve provider knowledge about the recommended expansion of prenatal care and programmatic efforts to motivate clinicians to provide health behavior advice and prenatal procedures through educational strategies or financial incentives. Development of a comprehensive prenatal care record that documents items crucial to care, for example, could provide an opportunity for evaluating the content of care delivered in diverse settings and facilitate continuous documentation of all risk assess-

ment, health promotion, and intervention activities provided.

Our low overall rate of using prenatal care in the United States is further diminished by the inadequate content of prenatal care delivered once in care. Improving the content of and increased access to the recommended prenatal care content are critical goals. These data suggest considerable room for improvement in the content of prenatal care provided to women in the United States. Full access to high quality prenatal care remains elusive in the United States. The total impact of prenatal care on pregnancy outcomes will be less than the maximum until all women have access to the full recommended content of care.

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