

Barriers to Prenatal Care: Factors Associated with Late Initiation of Care in a Middle-Class Midwestern Community

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BACKGROUND. Barriers to prenatal care have been extensively investigated in low-income and inner-city communities. Less attention has been directed to the study of prenatal care among middle- and upper-class pregnant women. This study describes perceived barriers and factors associated with late initiation of prenatal care in a predominantly middle- to upper-class midwestern community.

METHODS. Consenting women in Olmsted County, Minnesota, who were attending a clinic for their first obstetric visit completed a self-administered questionnaire that queried the presence of factors making it difficult to receive prenatal care, perception about the importance of prenatal care, expectations at the first prenatal care visit, and sociodemographic factors.

RESULTS. Of the 813 women aged 14 to 47 years, 692 (86%) had their first prenatal visit within the first trimester of pregnancy. Only 98 (12%) women reported external barriers to receiving prenatal care. These factors included difficulty in getting an appointment (46.9%), problems finding child care (26.5%), and lack of transportation (14.3%). In multivariable logistic regression analyses, late initiation of care was associated with patient perception of prenatal care as being less than very important (odds ratio [OR] = 4.1, 95% confidence interval [CI], 1.7 - 9.7); external barriers to prenatal care (OR = 2.9, 95% CI, 1.6 - 5.4); annual income <\$17,000 (OR = 2.9, 95% CI, 1.5 - 5.7); and an unintended pregnancy (OR = 2.1, 95% CI, 1.3 - 3.5). Multiparous women and women older than 35 years were more likely to perceive prenatal care as less than very important (OR = 3.9, 95% CI, 2.5 - 14.6 and OR = 2.9, 95% CI, 1.2 - 6.8, respectively).

CONCLUSIONS. These findings suggest that perceptions about the importance of prenatal care may play a greater role in the initiation of care among this group of women than is recognized. Women with more experience with pregnancy appear to place slightly less importance on prenatal care.

KEY WORDS. Prenatal care; perception; barriers. (*J Fam Pract* 1998; 47:53-61)

Prenatal care is one important factor affecting prenatal outcomes. Although the details regarding which elements of prenatal care are most valuable and what frequency is most effective remains controversial, the overall benefit of prenatal care compared with no prenatal care is not in doubt.¹⁻¹³ Early initiation is associated with improved outcomes. According to the US Department of Health and Human Services, risk assessment at the first prenatal visit can identify as many as 80% of women at high risk of having a low birthweight infant.¹⁴

Despite the known benefits of prenatal care, barriers to care can delay or prevent women's use of it.¹⁴⁻²²

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Previous studies and social theory often divide those barriers into external and internal barriers. Internal barriers include low socioeconomic status,^{14,23} unmarried status,²³ low level of education,^{23,26} low income,^{23,27} maternal age (teenaged and older than 40 years),^{21,25,28} race/ethnicity (black, Asian, or other immigrant population),²⁶ ignorance of or an unwanted pregnancy,¹⁴ multiparity,²⁵ lack of social support,¹⁴ and perceptions about prenatal care,^{14,18,21,29} including the anticipated content of the care.³⁰⁻³⁴ External barriers include high health care costs or inadequate insurance,^{23,24} inaccessibility to health care because of lack of transportation,¹⁴ distance from health care facility,¹⁴ and inability to obtain a doctor's appointment or impersonal treatment received at health care facilities.^{25,27,28,35,36}

Most studies on the barriers to prenatal care have been conducted among inner-city populations and minority groups,^{14,24,27,28,37,38} and a few have been done in rural populations.²⁰ Many people perceive that the barriers in middle-class communities are uncommon and different from those experienced by inner-city women. Very few studies on the initiation of prenatal care have been conducted in this subgroup of the US population to confirm or deny

these perceptions. While external barriers relating to socioeconomic status may not exert an important influence, internal barriers may play a role not fully appreciated among middle-class women.

Our study, conducted among pregnant women in a middle-class community with readily available medical resources and few minority women, describes perceived barriers to prenatal care, factors associated with the late onset of prenatal care, factors associated with a woman's perception of the importance of prenatal care, and her expectations of the content of the first prenatal visit.

METHODS

SETTING AND STUDY SUBJECTS

Most of the primary and specialty medical care for county residents is delivered by two main providers based in Rochester, Minnesota: the Mayo Clinic and the Olmsted Medical Center, and their affiliates in the county. Approximately 98% of Olmsted County obstetric patients receive prenatal care and delivery services in facilities within the county. Between September 14, 1993, and March 31, 1994, all Olmsted County residents presenting for their first prenatal visit at these sites were invited to participate in this study. Patients who agreed to participate completed a 64-item self-administered questionnaire before leaving. Patients who failed to return the questionnaire were mailed a follow-up questionnaire.

A total of 878 (86%) of 1020 questionnaires were completed and returned. Of the 878 respondents, 63 were excluded from the analysis for having previously initiated prenatal care for the current pregnancy with a provider outside Olmsted County ($n=32$), having had 2 or more prenatal visits prior to the date the questionnaire was completed ($n=20$), or a delay of more than 4 weeks in returning the questionnaire ($n=11$). Several questions pertained to the first prenatal visit; thus these patients could have had experiences that could alter their responses to the questionnaire. Additionally, questionnaires for one non-English speaking woman and that of a woman of unknown county of residence were also excluded from the analyses ($n=2$).

MEASUREMENTS

The questionnaire was designed to obtain information on the current pregnancy, perceptions about pregnancy, external barriers to seeking prenatal care, and socioeconomic characteristics. Most questions were close-ended. Queries about the current pregnancy included the date of last menstrual period, number of weeks from making the appointment to the first visit, gestational age at first prenatal visit, whether pregnancy was intended (trying to get pregnant, trying to avoid getting pregnant, neither trying to get pregnant nor avoiding pregnancy), and patient's feelings about being pregnant (on a scale of 1 to 5). Patients indicated what they thought was the most

appropriate time for the first prenatal visit (before getting pregnant, first through ninth month, or "I don't think you need to see a doctor"). Expectations at the first prenatal care visit were assessed by the question "What do you think the doctor will do on your first visit for being pregnant?" and was followed by a list of 20 issues. Each subject checked yes or no for each issue, and indicated which of the issues was the most important to her.

Perception about the importance of prenatal care was assessed by the question "How important do you feel it is to see a doctor on a regular basis while you are pregnant?" and was ranked on a 5-point Likert scale (ranging from 1 = very important to 5 = very unimportant). To determine the factors influencing care-seeking during pregnancy or external barriers to care, women were asked, "Are there any factors that make it difficult for you to get to a doctor for prenatal care?" Specific factors were queried: transportation, affording to leave work/cost of care, being scared, too busy, difficulty in getting an appointment, daycare or baby-sitter problems, and inability to leave work. An open-ended question allowed respondents to state factors that did not appear on the list. Problems in a previous pregnancy were assessed by the question "Did you have any problems with your previous pregnancies?" and women who responded yes were asked to state the specific problem. The most common problems reported were miscarriage (56), preterm delivery (40), hypertension (24), preeclampsia (20), diabetes (15), cesarean delivery (15), intrapartum hemorrhage (9), and ectopic pregnancy (8). Other complications reported by fewer women were stillbirths, spontaneous abortions, hyperemesis gravidarum, cervical incompetence, intrauterine growth retardation, large fetus for gestational age, post-maturity, breech presentation, and fetal distress. Sociodemographic information assessed included maternal age, marital status, social support, income, and education of patient and spouse (or partner). Race was not assessed because Olmsted County is 96% white and is considered a relatively homogeneous community.

The questionnaire items were developed by the authors for face validity according to a review of the literature. It was pilot-tested among 20 women prior to the study to assess clarity of questions, readability, and time required for completion. Then the questionnaire was revised and retested among 10 women. On average, the final version required 15 minutes for completion.

STATISTICAL ANALYSES

The proportion of women reporting external barriers to prenatal care and the importance of each barrier was assessed from questionnaire responses. A patient was categorized as an early initiator of prenatal care if the first prenatal visit was within the first trimester of pregnancy. Bivariate and multivariate associations between onset of prenatal care and maternal age, parity, external barriers to

care, problems in a previous pregnancy, perception of the importance of regular prenatal care, intention to get pregnant, annual household income, and education level were assessed using logistic regression models. Women who reported they were neither trying to get pregnant nor avoiding pregnancy were combined with women who reported they were trying to avoid pregnancy and classified as having unintended pregnancies, because the separate odds ratios for both groups were essentially the same.

In a second set of analyses, women were categorized on the basis of their perception of the importance of prenatal care during pregnancy (very important compared with other) and bivariate and multivariable associations between this factor and demographic and pregnancy characteristics (gestation at first prenatal visit, maternal age, parity, education, and previous problem pregnancy) were assessed using logistic regression analyses. The associations were also investigated with women stratified on parity and problems in a previous pregnancy, using the Breslow-Day test of homogeneity of the odds ratio.³⁰ By use of simple statistics, expectations of the content of prenatal care were assessed individually as well as grouped into two categories: activities that require expert medical knowledge, such as determination of the size and gestational age of fetus; and those activities that may be available from community and family resources, such as education about smoking cessation or management of minor nausea. All statistical analyses were performed using the Statistical Analysis System package (SAS Institute, Cary, NC).

RESULTS

CHARACTERISTICS OF RESPONDENTS

A total of 813 women residing in Olmsted County completed the questionnaire within 4 weeks of their first obstetric visit for their current pregnancy. The median age of these women was 29 years. Eighty-six (10.6%) were 35 to 40 years old and 10 (1.2%) were 40 to 47. The prevalence of teenage pregnancy was relatively low with only 43 (5.3%) aged 19 years or younger. Seven hundred eighteen (88%) were either married or lived with a significant other. Approximately half of the women (54%) were employed full-time, 23% part-time, and 23% were unemployed; 93% had spouses who were employed. Most women were of middle- to upper-class socioeconomic status; 50% had an annual household income of \$17,000 to \$50,000, 37% had a household income higher than \$50,000, and 13% had a household income below \$17,000. Three quarters of women (596) had more than 12 years of education. Nearly all women (92%) had at least one form of insurance coverage for the pregnancy. Of the 554 multiparous women, 200 (36%) reported problems in a previous pregnancy, 319 (58%) did not have any problems, and 35 (6%) did not answer the question.

Most women (86%) initiated prenatal care within the first 3 months of pregnancy. The median gestational age at the time the questionnaire was completed was 10 weeks. Of the 114 women who initiated care late, 81 (71%) were at 13 to 16 weeks' gestation, 17 (15%) were 17 to 20 weeks, 14 (12%) were 21 to 28 weeks, and 2 (2%) were beyond 30 weeks' gestation. The mean waiting time between scheduling of the appointment for the first prenatal visit and when the patient was seen was 5.8 weeks. The proportion of unintended pregnancies was relatively low: 493 (61%) women had been trying to get pregnant, 111 (14%) had been trying to avoid getting pregnant, and 200 (25%) were neither trying to get pregnant nor trying to avoid getting pregnant. Overall, most women had positive feelings about the pregnancy: 65% were very happy, 23% were somewhat happy, 5% were neutral, and only 7% were unhappy or very unhappy. Almost a third of the patients (259, 31%) were in their first pregnancy, about two thirds had between 1 and 5 previous pregnancies, and slightly less than 2% had 6 or more previous pregnancies.

Only 98 women (12%) reported having external barriers to care (Table 1). Among these, the most frequently reported factor was difficulty in obtaining an appointment to see the doctor. Among the women (46, 47%) who reported difficulty in obtaining an appointment, the median (25th, 75th percentile) was 4 (6, 8) weeks for the gestational age when they called to schedule an appointment, and 5 (4, 7) weeks until the appointment. Thus, most of them tried to schedule the appointment within the first trimester and most were seen within the first trimester. Other factors reported were problems finding child care for small children (26, 26%), lack of transportation (14, 14%), and inability to leave work or the cost of prenatal care (13, 13%) (Table 1). Most barriers stated in the open-ended response were modifications of the specific factors queried.

Nearly all the women (775, 95%) perceived prenatal care as very important, and 38 (5%) perceived it as being less than very important. Perception of prenatal care as being very important decreased with increasing gestational age, maternal age, being multiparous, and having external barriers to prenatal care (Table 2). Of the women at less than 6 weeks, 6 to 12 weeks, 13 to 20 weeks, and more than 20 weeks gestation, 32 (100%), 638 (97%), 87 (89%), and 12 (75%), respectively, perceived prenatal care as very important (P for trend = .0001). Of women less than 17 years, 17 to 34, and 35 or older, 100%, 96%, and 91%, respectively, perceived prenatal care as being very important (P for trend = .014). Ninety-six percent of women with no external barriers to care and 90% of women with external barriers (P = .004), and 98% of nulliparous and 94% of multiparous women perceived prenatal care as very important (P = .006).

TABLE 1

Specific Factors Reported by 98 Women That Make It Difficult to Receive Care During Pregnancy

Factor	No. (%)
Difficulty in obtaining an appointment	46 (47)
Problems finding child care	26 (27)
Lack of transportation	14 (14)
Cannot afford to leave work/high cost of care	13 (13)
Schedule too busy	6 (6)
Will not be allowed time off work	6 (6)
Scared	4 (4)

Note: Of a total 813 women, 98 (12%) reported having a factor that made it difficult to receive care.

BIVARIATE AND MULTIVARIABLE ASSOCIATIONS

There were significant bivariate associations between late onset of care and perception of the importance of prenatal care, low income, having factors that make it difficult to receive prenatal care, unintended pregnancy, marital status, and maternal education (Table 3). When considered simultaneously, the relative odds of seeking care late were still increased for women who perceived prenatal care as being less than very important (odds ratio [OR] = 4.1, 95% confidence interval [CI], 1.7 - 9.7), women with an annual household income of less than \$17,000 (OR = 2.9, 95% CI, 1.6 - 5.4), women who reported having external barriers to prenatal care (OR = 2.9, 95% CI, 1.6 - 5.4), and women with unintended pregnancies (OR = 2.1, 95% CI, 1.3 - 3.5) (Table 3). There was a significant first-order interaction between having external barriers to prenatal care and education in their association with initiation of care. Women who reported external barriers to prenatal care had a threefold risk of initiating care late if they had 12 or more years of education, but a tenfold risk if they had less than 12 years of education.

Bivariate associations showed that women at greater than 12 weeks' gestation at the first prenatal visit (114, 14.1%), multiparous women (554, 68.6%), women who had external barriers to prenatal care (98, 12.1%), or women aged 35 years or older (96, 11.8%) (OR = 4.8, 3.9, 2.9, 2.5, respectively) were more likely to perceive prenatal care as less than very important (Table 4). When

considered simultaneously, multiparous women (OR = 3.9, 95% CI, 2.5 - 14.6), women whose gestational age at the first visit was more than 12 weeks (OR = 3.5, 95% CI, 2.3 - 10.8), and women aged 35 years or more (OR = 2.9, 95% CI, 1.2 - 6.8) were more likely to perceive prenatal care as less than very important (Table 4). There was no significant association between perception and desire for the pregnancy.

Several interesting trends were observed between variables and perceptions about the importance of prenatal care when women were stratified by parity. All nulliparous women had equivalent perceptions of the importance of prenatal care despite the existence of external barriers or greater maternal age. Although not statistically significant, nulliparous women with less education were more likely to perceive prenatal care as less than very important (OR = 3.1, 95% CI, 0.3 - 35). By contrast, among multiparous women, external barriers to care (OR = 2.9, 95% CI, 1.3 - 6.4) and greater maternal age (OR = 2.3, 95% CI, 1.0 - 5.2) were more strongly associated with the perception of prenatal care as being less than very important. Perceptions about prenatal care were not associated with level of education among multiparous women. Among both nulliparous and multiparous women, however, late onset of care was positively associated with a perception of prenatal care as less than very important, with a stronger association among nulliparous women (OR = 7.5, 95% CI, 1.0 - 5.5 and OR = 4.4, 95% CI, 2.1 - 9.4, respectively).

Interesting observations were also revealed when women were stratified by previous problem pregnancy. While external barriers to care and late onset of prenatal care were positively associated with the perception of prenatal care being less than very important in both groups of women, the associations were stronger in women with no previous problem pregnancy. Greater maternal age was also positively associated with the perception of prenatal care being less than very important; however, the association was stronger among women with a history of a previous problem pregnancy (OR = 3.3, 95% CI, 1.0 - 10.6 and OR = 1.3, 95% CI, 0.4 - 4.7).

EXPECTATIONS AT FIRST PRENATAL VISIT

Overall, the proportion of women who reported that they expected a service to be provided at the first prenatal visit was higher for women who perceived prenatal care as very important than for women who did not. There were significant associations between perception of the importance of prenatal care and patient expectations of the physician's getting to know the patient (93% vs 83%), discussion of what to expect during pregnancy (97% vs 87%), ways to control nausea and vomiting during pregnancy (79% vs 56%), and use of illicit drugs (80% vs. 64%, all $P > .05$). However, for the rest of the expectations, there was no statistically

TABLE 2

Prenatal Care by Maternal Characteristics

Characteristic	Very Important No.† (%)	Other* No.† (%)	P‡
Gestational age (weeks)			.0001
<6	32 (100.0)	0 (0)	
6-12	638 (96.8)	21 (3.2)	
13-20	87 (88.8)	11 (11.2)	
≥21	12 (75.0)	4 (25)	
Maternal age (years)			.05
<17	7 (100.0)	0 (0)	
17-34	681 (96.1)	29 (3.9)	
≥35	87 (90.6)	9 (9.4)	
Prior pregnancy			.006
Yes	520 (94.0)	33 (6.0)	
No	249 (98.4)	4 (1.6)	
External barriers to care			.004
Yes	88 (89.8)	10 (10.2)	
No	683 (96.2)	27 (3.8)	
Education (years)			.96
<12	89 (95.7)	4 (4.3)	
≥12	672 (95.6)	31 (4.4)	
Previous problem pregnancy			.68
Yes	186 (93.5)	13 (6.5)	
No	301 (94.4)	18 (5.6)	

*Other represents women who perceived prenatal care as somewhat important, were neutral, or perceived it was somewhat unimportant. One woman 6-12 weeks pregnant, 1 woman aged 17 to 34 years, and 1 woman with no previous pregnancy considered prenatal care somewhat unimportant. No one perceived prenatal care as very unimportant.

†Numbers may not total 813 because of missing data or no previous pregnancy.

‡P for trend.

significant association with patient perception of the importance of prenatal care. The majority of women (approximately 80%) did not expect to have an ultrasound or an assessment for birth defects at the first prenatal visit. The issues that were selected as most important at the first prenatal care visit were the assessment of gestational age (22.2%), an assessment of how the baby was doing (21.1%), and a pelvic examination (13.3%). Smoking, alcohol use, illicit drug use, and abuse were not selected by any women as the most important issue at the first prenatal visit.

For most expectations, there was a significant association with parity (results not shown). With the exception of pelvic examination, determination of gestational age, getting acquainted with the doctor, assessment of how the baby is doing, and having an ultrasound, a significantly higher proportion of nullipara than multipara expected the remaining services at the first prenatal visit.

DISCUSSION

Our findings suggest that the most important factor associated with late initiation of care among this group of middle- to upper-class women is the perception of prenatal care as being less than very important. Reporting the presence of external barriers to prenatal care, a low income, and having an unintended pregnancy were also associated with late initiation of care. A perception of prenatal care as being less than very important was associated with increasing maternal age, multiparity, self-identified barriers to prenatal care, and gestational age of more than 12 weeks at the onset of prenatal care. Only in women older than 35 was having a self-identified previous problem pregnancy associated with attaching less importance to prenatal care. The reason for this association is not clear and may require further investigation.

Older women and those with more pregnancy experience may feel they need less medical attention during pregnancy, since they learned a great deal during their previous experience. Or perhaps they feel that the attention they received with previous pregnancies did not affect the course of their pregnancy or their pregnancy outcome. This perception of prenatal care as being less important with subsequent pregnancies is of concern. While it is true

that much of the educational intervention is similar for each pregnancy, the risk assessment and the physical assessment of the pregnancy must be completed in each pregnancy.

It is possible that the decreased perception of the importance of prenatal care reported by these older and more experienced women parallels the findings of the Expert Panel on the Content of Prenatal Care. That group pointed out the importance of an assessment (prenatal visit) early in pregnancy but recommended a reduced schedule or total number of visits for healthy low-risk women.^{40,41} For these low-risk women a perception of prenatal care as being less important may be justified if the perception relates to frequency of visits and not to early initiation of prenatal care.

The perception of prenatal care as less important by women with fewer years of formal education, especially nulliparous women with less education, may reflect a lack

TABLE 3

Factors Associated with Late Initiation of Prenatal Care

Factor	Bivariate		Multivariable	
	Odds Ratio	95% CI*	Odds Ratio	95% CI*
Importance of prenatal care				
Other†	4.8	2.4, 9.7	4.1	1.7, 9.7
Very important	1.0		1.0	
External barriers to care‡				
Yes	3.7	2.3, 6.0	2.9	1.6, 5.4
No	1.0		1.0	
Household income per year				
<\$17,000	4.5	2.8, 7.4	2.9	1.5, 5.7
≥\$17,000	1.0		1.0	
Pregnancy				
Avoiding pregnancy or neither attempting nor avoiding pregnancy	3.2	2.1, 4.9	2.1	1.3, 3.5
Trying to get pregnant	1.0		1.0	
Marital status				
Not married	3.6	2.2, 5.8	1.3	0.6, 2.9
Married§	1.0		1.0	
Maternal education (years)				
<12	2.1	1.2, 3.6	1.4	0.7, 2.7
≥12	1.0		1.0	
Parity				
Multiparous	1.2	0.8, 1.9	1.5	0.8, 2.9
Nulliparous	1.0		1.0	
Maternal age (years)				
≥35	0.8	0.4, 1.6	0.9	0.4, 1.9
<35	1.0		1.0	
Previous problem pregnancy				
No	0.7	0.4, 1.1	0.8	0.5, 1.4
Yes	1.0		1.0	

*95% confidence interval

†Other denotes women who perceived regular prenatal care as somewhat important, neutral, or somewhat unimportant.

‡Women who responded yes to having factors that made it difficult to receive prenatal care were classified as having external barriers to care.

§Married or living with a significant other.

of previous experience with pregnancy, a lack of knowledge, or a decreased societal or cultural value placed on prenatal education among the peers of these women. This deserves further investigation. The benefits of in-school prenatal classes and support for pregnant teens may be reflected in the response of all the pregnant women younger than 17 that prenatal care is very important.

Our data confirm that women appear to be affected by their perceptions. As anticipated, women who responded

that prenatal care was less than very important were also more likely to begin prenatal care after 12 weeks' gestation. This was further compounded by the women who had external barriers to prenatal care, such as lack of child care or difficulty leaving work. It is not possible from this cross-sectional survey to determine whether the presence of external barriers increased the internal barriers and thereby decreased the importance these women attached to prenatal care or vice versa.

Some of the women's expectations of the content of the first prenatal visit could have been predicted. For example, most women expected to have their physician confirm the pregnancy and its duration; discuss medication, exercise, and diet; and complete a pelvic examination. It might be considered discouraging that 20% or more of women did not expect their doctor to discuss smoking, the use of alcohol and illicit drugs, or sexual activity during pregnancy. Only approximately 60% believed that the physician would assess the well-being of the baby during the first prenatal visit. This did not vary between women who thought prenatal care was very important and those who did not. In this community, where there is a very low prevalence of AIDS, slightly more than 50% of women thought their physician would discuss AIDS. Less than 50%

expected the more common problem of abuse and domestic violence to be discussed. This may reflect the timing of the survey, which was completed approximately 4 years ago, when domestic violence was given less media attention than it currently receives. The significant associations between parity and expectations suggests that the needs of nulliparous women at the first prenatal visit differ from those of multiparous women. The expectations of these well-educated, upper-middle-class women may be useful

TABLE 4

Bivariate and Multivariable Associations Between the Perception of the Importance of Prenatal Care* and Maternal Factors

Maternal factor	Bivariate		Multivariable	
	Odds Ratio	95% CI†	Odds Ratio	95% CI†
Gestational age (weeks)‡ <12 vs ≥12	4.83	2.41, 9.69	3.48	2.32, 10.77
Parity Multiparous vs nulliparous	3.95	1.38, 11.27	3.91	2.50, 14.60
External barriers to care Yes vs No	2.87	1.34, 6.14	2.29	0.96, 3.72
Maternal age (years) <35 vs ≥35	2.54	1.16, 5.56	2.88	1.22, 6.76
Previous problem pregnancy Yes vs No	0.86	0.41, 1.79	0.98	0.45, 2.14
Education (years) <12 vs ≥12	0.97	0.34, 2.82	0.81	0.25, 2.55

*Women were categorized as perceiving prenatal care as very important versus somewhat important, neutral, or somewhat unimportant.

†95% confidence intervals.

‡ Gestational age at onset of care.

in reassessing the current content of first prenatal visits. Lowered expectations of fetal assessment and the provision of practical advice and screening for domestic violence may reflect our failure to include these in prenatal care.

Self-reported barriers to prenatal care among women in this study differ from those frequently reported as the most important among low-income women. Among low-income women, financial barriers,^{42,45} inadequate health insurance,^{42,43} poverty,⁴³ lack of transportation,⁴⁵⁻⁴⁷ and lack of child care^{45,48} are the external barriers to care that are cited most often. In contrast to these, the two major specific external barriers to prenatal care reported by all Olmsted County women were difficulty in obtaining an appointment (not because of financial constraints) and child care problems for small children. On average, women in our study had to wait 6 weeks for their first prenatal visit. Since Rochester has a relatively high number of health care providers, the difficulty in obtaining an appointment may relate to the large number of referral cases seen by physicians, as well as to the large number of women from outside the county who choose to receive care in Rochester. Alternatively, it may reflect a failure of the health care system to recognize the issue and expand available prenatal appointments to fit the demand in a more timely manner. It was difficult to determine the exact proportion of women for whom cost of care was a barrier because of the way the question was posed. However, nearly two thirds of low-income Olmsted County women still sought care early. Finally, whether women were trying to get pregnant was significantly associated with onset of care. Intuitively, women who desire a pregnancy are likely to be eager to ensure that the pregnancy is progressing appropriately. Thus, they are more likely to seek care early. An undesired pregnancy, therefore, may constitute a barrier to care among middle- to upper-class women.

Certain potential limitations to our study must be recognized. First, perception about the importance of prenatal care is a difficult concept to measure. In our study, perceptions about the importance of prenatal

care were assessed from one question, and this may not provide a complete picture of this concept. However, our results indicate that women who sought care after the first trimester were 3.5 times as likely to perceive prenatal care as being less than very important. This provides construct validity for the question used in our study in that women's perceptions (which most likely preceded onset of care for this particular pregnancy) were related to onset of prenatal care. Second, interrelatedness among the factors associated with the perception of the importance of prenatal care makes it difficult to determine which is the most important component. Parity, maternal age at gestation, and external barriers to care are interrelated with one another and with perceptions about prenatal care. Third, only 38 (5%) women perceived prenatal care as being less than very important, thus our results should be regarded with caution. Post hoc power analysis demonstrated that the precision of our estimates was ±17%. Finally, women in this study were predominantly white and of middle- to upper-class socioeconomic status, and our findings may best be generalized to similar populations.

Our findings suggest that while most women in our study initiated prenatal care in a timely fashion, a perception of prenatal care as being less than very important was associated with late initiation of care. Women with more experience with pregnancy appear to place

slightly less importance on prenatal care. It is possible that these women do not perceive that the care they received with previous pregnancies was valuable. In addition, women's expectations of the content of prenatal care may reflect physicians' lack of emphasis on domestic violence screening and education regarding drug and alcohol use in middle- and upper-class populations. Further investigation of the factors associated with the perception of the importance of prenatal care may provide insight into the care-seeking behavior of these women.

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