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Employment Patterns and Timing of Birth in Women With High-Risk Pregnancies

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Abstract

Objective—To describe the characteristics of employed women with high-risk pregnancies, their pattern of employment prenatally and postpartum, and the relationship of prenatal employment to preterm or full-term birth.

Design—Secondary analysis with a sample of 171 women with high-risk pregnancies.

Setting—Women's homes and a tertiary care hospital.

Participants—Women who were primarily single, African American, and poor; 33% worked or attended school during their pregnancies.

Main Outcome Measures—Gestational age at birth, employment, and school attendance.

Results—Preterm delivery was not related to when the women stopped working or attending school or were prescribed bed rest. Women employed prenatally were older, had higher incomes, and were more likely to be white or of ethnicity other than African American. Fifty-seven percent of women with a history of prenatal employment and 85% of the women who intended to work after delivery returned to work during the first postpartum year.

Conclusions—Women employed during high-risk pregnancies are similar demographically to women with low-risk pregnancies in other studies. Most of the women stopped working or attending school because of prescribed bed rest. Bed rest, however, was not related to preterm

delivery. Most women who planned to return to work did so. Factors other than the women's high-risk pregnancies, such as attitudes toward employment, employability, and family circumstances, most likely influenced their employment status. Current welfare reform initiatives will increase the number of women working while pregnant. This article provides pre-welfare-reform baseline data concerning patterns and effects of employment for women with high-risk pregnancies. These data will enable nurses to examine the effects of welfare reform on employment during pregnancy and preterm birth.

Keywords

Bed rest; Employment; High-risk pregnancy

Of the 4 million pregnancies in the United States each year, 15% are labeled high-risk because of pre-existing diseases, such as hypertension and diabetes, pregnancy-related health problems, or risk of preterm labor (U.S. Department of Health and Human Services, 1995). Having a high-risk pregnancy increases the mother's and child's risk for disability and mortality. Women with high-risk pregnancies frequently are hospitalized for assessment, stabilization, and prevention of complications that endanger pregnancy outcomes. They also may encounter prolonged postpartum hospitalizations for treatment of complications (York et al., 1997). Such hospitalizations are likely to affect women's employment status and/or school attendance. Understanding the relationship between employment patterns and pregnancy outcomes as well as these women's ability to resume employment and/or school after child-birth will allow health care providers to better counsel women regarding employment during high-risk pregnancy and will enhance maternal and child health outcomes. The purpose of this article is to describe the characteristics of women with high-risk pregnancies who are working and/or attending school, their pattern of employment and/or school attendance during pregnancy and its relationship to preterm birth, and their pattern of employment during the 1st postpartum year.

Prior to the 1960s, women quit their jobs during pregnancy because of employment policies and social values (Killien, 1990). Since the 1960s, patterns of maternal employment during pregnancy have changed because of increased female participation in the workforce and improved maternity leave benefits (Killien, 1993). Pregnant women continue working for numerous reasons, including self-actualization, escape from home, employment identity, money, financial obligations, and positive feelings about their jobs. Reasons pregnant women stop working include pregnancy-related limitations, home identity, family responsibilities, job availability, and workplace factors (Lee, Sorenson, & Tschetter, 1994).

The number of women who work outside the home during their pregnancies has increased steadily during the past decades. The U.S. Bureau of the Census (1990) reported that 65% of primigravidae were employed during pregnancy and 78% of these women continued to work during the 3rd trimester. Killien (1993) found that more than 70% of women with low-risk pregnancies continued working until 1 week before delivery and 34% of these women took no leave before childbirth. However, in a study of 224 families of premature infants, Gennaro (1996) found that 50% of mothers were employed during the antepartum period, but only 5% continued working until delivery.

A number of researchers have examined characteristics of employed women and the effect of employment during pregnancy on the timing of birth in women with low-risk pregnancies. Women who worked during pregnancy were more likely to be white, older, and have a higher income and educational level than nonemployed pregnant women (Henriksen, Savitz, Hedegaard, & Secher, 1994; Moss & Carver, 1993; Savitz, Whelan, Rowland, & Kleckner, 1990; Witwer, 1990). Researchers in two studies found that employed pregnant

women were at lower risk for preterm delivery and low-birth-weight infants than nonemployed women (Poerksen & Petitti, 1991; Savitz et al., 1990). However, other researchers found no relationship between employment during pregnancy and birth outcome (Klebanoff, Shiono, & Carey, 1990; Moss & Carver, 1993; Schramm, Stockbauer, & Hoffman, 1996).

Pattern of employment and its relationship to timing of birth among women with high-risk pregnancies has received little attention in the literature. Traditional treatment for women with high-risk conditions, such as multiple pregnancy, preterm labor, hypertension, antepartum hemorrhage, and fetal growth retardation, is bed rest (Crowther, 1995), despite equivocal evidence of its efficacy (Goldenberg et al., 1994; Maloni, 1996; Maloni et al., 1993). Bed rest has been found to cause muscular and cardiovascular deconditioning, which prolongs postpartum recovery (Maloni et al., 1993). Recommendations for bed rest range from spending a few hours a day lying down at home to spending 24 hours a day in bed in a hospital. Josten, Savik, Mullett, Campbell, and Vincent (1995) found that 38% of the high-risk pregnant women in their study were prescribed partial bed rest (rest part of the day or frequent rest on the side with feet up), and 20% were prescribed total bed rest (bathroom privileges only). More than one third of these women did not comply with the total bed rest recommendation because of the need to care for children, not feeling sick, household demands, lack of partner or family support, discomfort, and need to work.

Women's patterns of employment after giving birth have changed as well. The number of employed mothers with infants has increased. According to the U.S. Bureau of the Census (1996), the number of employed mothers with a child age 1 year or younger increased from 30.8% in 1975 to 59% in 1995. Researchers have found that mothers with a history of prenatal employment are more likely to return to work soon after delivery than women who were not employed prenatally. Klerman and Leibowitz (1993), using data from the National Longitudinal Survey-Youth, found that more than three quarters of women who worked full-time before the birth of a child returned to work within 6 months postpartum. Likewise, Joesch (1994) found that mothers of healthy infants returned to work earlier if they had been employed during pregnancy.

Research with mothers of preterm infants has produced conflicting results about when these women return to work. Youngblut (1995) found that 33.7% of mothers with preterm infants in two-parent families were employed at 3 months postpartum, 48% at 9 months, and 52% at 12 months. In Gennaro's study (1996), only 27% of mothers with premature infants returned to work. Employment rates during the postpartum period for these mothers increased from 7% at 1 month to 21% at 3 months and 27% at 6 months. Women who returned to work reported working fewer hours than they had originally planned.

In sum, research describing employment patterns in women with high-risk pregnancies during the perinatal and postpartum periods is limited. The influence of employment during high-risk pregnancy on whether the birth is preterm or full-term also has received little attention. With these gaps in the literature, the following research questions were posed:

1. What is the pattern of employment and/or school attendance in high-risk pregnant women during the antepartum and postpartum periods?
2. How do women employed during high-risk pregnancy compare with women who are not employed?
3. Is preterm or full-term birth related to bed rest or trimester when the women with high-risk pregnancies stopped working and/or attending school?

Methods

Data for this secondary analysis were from a randomized clinical trial involving women at high-risk of delivering a low-birth-weight (LBW) newborn (Brooten et al., 1999). The trial was conducted in a large city in the eastern United States. In the trial, one group of women ($n = 86$) received routine prenatal and postpartum care, while a second group ($n = 85$) had one half of their prenatal care, normally delivered by a physician in the office or clinic, replaced with care delivered in the home by master's prepared advanced practice nurses (APNs). After delivery, the intervention group received APN follow-up care to 6 weeks postdischarge. Women in both groups were followed for collection of outcome data from the time of diagnosis of their high-risk pregnancy to 12 months after delivery.

Sample

Women who experienced a high-risk pregnancy because of pregestational or gestational diabetes, chronic hypertension, preterm labor, or risk of preterm labor were included in the study. Women at high risk for preterm delivery included those with uterine fibroids, previous preterm labor, multiple pregnancy, or a score of 10 or above on a modified Creasy screening tool (Creasy, Gummer, & Liggin, 1980). In another study, 44.3% of those identified by the Creasy tool as being at high risk for preterm labor and delivery actually experienced preterm birth (Edenfield, Thomas, Thompson, & Marcotte, 1995). Women with pregnancy-induced hypertension were excluded because they often are hospitalized until delivery and therefore are not eligible for home care. Non-English speaking women and women without access to a telephone also were excluded.

The full sample consisted of 171 women. Most of the women were African American (93.6%), unmarried (74.9%), multiparous (87.1%), had at least a high school education (63.7%), family income less than \$12,500 annually (68.1 %), and received welfare assistance and public health insurance (86.5%). Thirty-three women (19.3%) were employed during pregnancy or at 1 year postpartum. The mean gestational age at the women's entry to the study was 5.91 weeks. Mean gestational age at birth was 37.3 weeks.

Variables

Women were classified as employed if they worked either part time or full time during pregnancy or within the 1st postpartum year. Women were classified as students if they attended school (middle school, high school, trade school, or college) during this period. Timing of birth refers to preterm or full-term delivery. Preterm delivery was defined as delivery before 37 weeks gestation (World Health Organization [WHO], 1977). Bed rest referred to physicians' prescriptions of bed rest for high-risk pregnant women and included complete bed rest and partial bed rest at home or in the hospital.

Procedure

In the larger study, high-risk pregnant women were solicited by a member of the research team at their first prenatal visit or when diagnosed with preterm labor or gestational diabetes. After the eligible participants were identified through a physician's office or the hospital clinic, a research team member contacted the women to explain the study and obtain consent. Following informed consent, women were randomly assigned to the control or intervention group. Women in both groups were followed for collection of outcome data through their pregnancy to 12 months postpartum. Interviews were conducted at the end of the 1st, 2nd, and 3rd trimesters of pregnancy and at 3, 6, 9, and 12 months postpartum. Demographic data were collected via patient interview.

For the current study, data on employment and school attendance were abstracted from hospital chart review and the participant interview forms. Data on bed rest and timing of birth were abstracted from the hospital chart review. Interrater reliability for 20 randomly selected participant charts was 98.6%.

Results

Of the 171 women in the full sample, 33 (19.3%) women worked and 24 (14%) attended school at some point during their pregnancies (one woman combined both roles). No significant difference was found in the number of employed and nonemployed women in the treatment and control groups. Seventeen women in the treatment group were employed and 16 in the control group were employed. Six participants were in middle school, 8 in high school, and 10 were attending college.

Diagnoses of the 33 working women were gestational diabetes ($n = 8$), pregestational diabetes ($n = 7$), diagnosed preterm labor ($n = 6$), high-risk of preterm labor ($n = 6$), and chronic hypertension ($n = 6$). Consistent with the demographics of the full sample, the majority of employed women were African American (84.8%), unmarried (81.8%), multiparous (69.7%), had at least a high school education (78.8%), had family incomes less than \$12,500 annually (42.4%), and received welfare assistance and public health insurance (69%). Occupations for women who were employed were classified as minor professional ($n = 4$), skilled ($n = 4$), semiskilled ($n = 12$), unskilled ($n = 3$), clerical ($n = 4$), farm labor/ menial ($n = 1$), and technician ($n = 5$) (Hollingshead, 1975).

Comparisons of the employed and nonemployed women revealed several significant differences (see Table 1). Employed women were significantly older, more educated, more likely to be white or of ethnicity other than African American, have an annual income higher than \$12,500, and have private health insurance. Nonemployed women were more likely to be students. More of the employed women had an initial diagnosis of diabetes, and more of the nonemployed women were diagnosed with preterm labor. Employed women were just as likely to have a preterm birth as nonemployed women. Twenty of the 33 working women (61%) had public health insurance, and 14 (42%) had annual incomes less than \$12,500.

Patterns of employment during pregnancy varied. Only 6 of 56 women (10.7%) worked or attended school without interruption throughout their high-risk pregnancy until delivery. Most of the 56 women worked or attended school at the beginning of their pregnancies. Five women (8.9%) stopped working or attending school during the 1st trimester, although one woman went back to school after 3 weeks of bed rest. These five women had chronic hypertension ($n = 1$) or were at risk for preterm labor ($n = 4$). Sixteen women (28.6%) stopped working or attending school during the 2nd trimester; one woman resumed employment during her 3rd trimester and worked until delivery. These women were diagnosed with or were at risk for preterm labor ($n = 11$), had gestational or pregestational diabetes ($n = 2$), or chronic hypertension ($n = 3$). Twenty-two women (39.3%) stopped working or attending school during the 3rd trimester; none of these women resumed employment before their deliveries. These women were either diagnosed with or at risk for preterm labor ($n = 8$) or had gestational diabetes ($n = 3$), pregestational diabetes ($n = 5$), or chronic hypertension ($n = 3$). Data were missing for 7 women (12.5%).

Of the 56 women who attended school or were employed sometime during their pregnancy, 38 (67.9%) were prescribed bed rest. All of those with bed rest recommendations stopped working or attending school for some time before giving birth. These women were diagnosed with having or being at risk for premature labor ($n = 23$), pregestational or gestational diabetes ($n = 7$), and chronic hypertension ($n = 8$). The proportion of full-term

and preterm deliveries was not related to prescribed bed rest (see Table 2). Of the women who worked or attended school during pregnancy, 37 women (66.1 %) had full-term deliveries and 18 women (32.1 %) had preterm deliveries. One woman spontaneously aborted during the 1st trimester. No relationship was found between the trimester the women stopped working or attending school and timing of birth (see Table 3). The trimester the women stopped working or attending school continued to have no relationship with timing of birth, after controlling for number of pregnancies, race, treatment group, income, and diagnosis with logistic regression.

Of the 56 women who worked or attended school at any point prenatally, 32 (57.1%) women resumed work or school within 12 months postpartum. Of these 32, 15 women (46.9%) returned to work or school by 3 months postpartum, ten by 6 months (31.3%), four (12.5%) by 9 months and three (9.4%) by 12 months. Three women did not return to work or school during the 1st postpartum year. Data were not provided by 21 women on whether they went back to work or school after delivery. Information regarding women's plans to return to work or attend school after childbirth and their actual behaviors was available for 34 women. All of these women planned to return to work or attend school after giving birth, and 29 (85.3%) women did so within the 1st postpartum year.

Discussion

In this sample, only 16% of the women were employed or in school during their high-risk pregnancies. This low percentage may be due to the sample being primarily low-income families, because women from low socioeconomic groups have lower rates of employment.

Timing of cessation of employment or school was not related to preterm delivery. This was true both with and without control for covariates, perhaps because of the relatively small number of women employed and the homogeneity of the sample. Cessation of employment or school activities occurred most commonly during the 2nd trimester, primarily for symptoms of preterm labor. One woman returned to work when the symptoms abated. Our findings regarding employment and preterm versus full-term birth are consistent with research on low-risk mothers. In a sample of low-risk mothers, Moss and Carver (1993) found no differences in pregnancy outcomes between women who worked during pregnancy and women who did not. Similarly, results of a case-control study showed no relationship between working during pregnancy and timing of childbirth among mothers with very-low-birth-weight, moderately-low-birth-weight, and normal-birth-weight infants (Schramm et al., 1996). Klebanoff et al. (1990), in their prospective cohort study of 7,101 women, also found that employed pregnant women were not at higher risk of having premature infants than were nonemployed women.

About two thirds of the women in the current sample were prescribed bed rest, which resulted in cessation of their employment or school activities. Preterm delivery, however, was not related to being prescribed bed rest. These findings are consistent with past work that refutes the efficacy of bed rest. For example, Maloni et al. (1993) found that women on complete bed rest had greater gastrocnemius muscle dysfunction, dysphoria, and loss of weight than women on partial or no bed rest. Josten et al. (1995) found no difference in pregnancy outcomes between high-risk pregnant women adhering to prescribed bed rest and those not adhering to prescribed bed rest. In addition, routine hospital bed rest during twin gestation pregnancy was not related to pregnancy outcomes such as gestational age, birth weight, and perinatal mortality (Hartikainen-Sorri & Jouppila, 1984).

Employed pregnant women were more likely to be white, older, and have higher incomes than nonemployed mothers. The current sample was relatively homogenous on race, so

generalization based on race must be done cautiously. However, these findings are consistent with previous research (Henriksen et al., 1994; Moss & Carver; Savitz et al., 1990; Witwer, 1990, 1993). Thus, it appears that high-risk pregnancy does not change the profile of women who are employed during pregnancy.

Of the 171 women in the sample, 18 (10.5%) became employed during the 1st postpartum year. Two thirds of these women became employed within the first 6 months after giving birth. This rate is considerably lower than the postpartum employment rate of mothers with preterm infants in previous studies: 33 (33.7%) at 3 months and 47 (48%) at 9 months postpartum in Youngblut's study (1995) and 61 (27%) at 6 months postpartum in Gennaro's study (1996). The difference may be due to the difference in samples. In Youngblut's sample, all the mothers were married or living with a male partner and the families had higher incomes than the current sample and Gennaro's sample. In Youngblut's and Gennaro's studies, families were recruited after a preterm birth; not all of the women had been identified as having high-risk pregnancies. In contrast, the current sample was recruited prenatally with high-risk pregnancies, but not all of the women delivered preterm. Therefore, the samples are not completely comparable. In addition, the prenatal employment rates differed; 76% of women in Youngblut's study, but only 19% of the women in the current study, were employed prenatally. Thus, without consideration of the base rate of employment in this sample, the lower postpartum employment rate could lead to the conclusion that high-risk pregnancy hampers the mother's ability to be employed after the child's birth.

Fifty-seven percent of the women employed or in school prenatally returned to work or school after delivery. Although this finding is limited by missing data, 83% of the women who planned to return to work or school did so. In a sample of mothers of 3-month-old preterm infants, Youngblut, Loveland-Cherry, and Horan (1990) found that intent to be employed was strongly related to employment status. Taken together, these findings indicate that factors other than a high-risk pregnancy influence a woman's employment status after birth. These factors may include employability, women's attitudes toward employment, and family circumstances. For example, in another study, education, number of children, and employment attitudes were related to employment status of single mothers of preterm and full-term preschoolers (Youngblut, Singer, Madigan, Swegart, & Rodgers, 1997).

In sum, one third of the women with high-risk pregnancies in this sample were employed or in school before or after giving birth. Half of the women stopped working and/or attending school before the 3rd trimester. For those who were employed and/or attending school, preterm delivery was not related to the trimester they stopped work or school activities or to being prescribed bed rest. Most of the women who were employed postpartum had worked during pregnancy. With welfare reform efforts, more women will be working during pregnancy and their patterns of employment during and after a high-risk pregnancy may reflect their history of employment. Thus, these pre-welfare reform data provide a baseline picture of the pattern and effects of employment during high-risk pregnancy and suggest that employment does not place the woman at higher risk for preterm delivery.

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TABLE 1
Comparison of Employed and Nonemployed Pregnant Women

	Employed (<i>n</i> = 33)	Nonemployed (<i>n</i> = 138)	Statistic
Age			
Mean (<i>SD</i>)	30.2 (5.82)	25.8 (6.29)	<i>t</i> = 3.63 ***
Range	19–40	15–39	
Primary diagnoses			
Gestational diabetes	8 (24.2%)	14 (10.1%)	$\chi^2 = 10.12^*$
Pregestational diabetes	7 (21.2%)	13 (9.4%)	
Diagnosed preterm labor	6 (18.2%)	47 (34.1%)	
Risk for preterm labor	6 (18.2%)	35 (25.4%)	
Chronic hypertension	6 (18.2%)	29 (21.0%)	
Employment status by treatment group			
Treatment	17 (51.5%)	57 (49.1%)	$\chi^2 = .85$
Control	16 (48.5%)	59 (50.9%)	
Student status			
Not a student	32 (97%)	115 (83.3%)	$\chi^2 = 4.10^*$
Student	1(3%)	23 (16.7%)	
Race			
African American	28 (84.8%)	132 (95.7%)	$\chi^2 = 8.69^*$
White	2 (6.1%)	5 (3.6%)	
Other	3 (9.1%)	1 (0.7%)	
Education			
< High school	7 (21.2%)	55 (39.4%)	$\chi^2 = 4.01^*$
At least high school graduate	26 (78.8%)	83 (60.1%)	
Marital status			
Never married	20 (60.6%)	108 (78.3%)	$\chi^2 = 0.42$
Married	6 (18.2%)	19 (13.8%)	
Divorced/separated/widowed	7 (21.2%)	11 (8%)	
Family income			
< \$5000	3 (9.1%)	54 (42.5%)	$\chi^2 = 12.65^{***}$
\$5000–\$12,499	11 (33.3%)	41 (32.3%)	
\$12,500–\$19,999	11 (33.4%)	18 (14.2%)	
\$20,000	8 (30.3%)	14 (11.0%)	
Type of health insurance			
Public	20 (69%)	128 (97.7%)	$\chi^2 = 28.28^{***}$
Private	9 (31%)	3 (2.3%)	
Timing of delivery ^a			
Preterm	18 (32.7%)	41 (35.3%)	$\chi^2 = .86$
Full-term	37 (67.3%)	75 (64.7%)	

^aDoes not include spontaneous abortion.

*
 $p < .05$.

**
 $p < .01$.

 $p < .001$.

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TABLE 2**Bed Rest and Birth Outcome**

	Recommended Bed Rest (n = 38)	Not Recommended Bed Rest (n = 18)	Fisher's Exact Test
Full-term delivery	26 (68.4%)	12 (66.7%)	
Preterm delivery ^a	12 (31.6%)	6 (33.3%)	1.00

^aOne spontaneous abortion included.

*
 $p < .05$.

TABLE 3Birth Outcome by Trimester Stopped Working and/or Attending School^{a,b} (*n* = 43)

	Trimester Stopped Working and/or Attending School			
	1st Trimester (<i>n</i> = 5)	2nd Trimester (<i>n</i> = 16)	3rd Trimester (<i>n</i> = 22)	χ^2
Full-term delivery	4 (80.0%)	9 (56.2%)	16 (72.7%)	1.55
Preterm delivery	1 (20.0%)	7 (43.8%)	6 (27.3%)	

^aWomen who later resumed working/attending school or who worked until delivery were excluded.^bMissing data for 7 women.*
p < .05.