Continued Smoking and Smoking Cessation Among Urban Young Adult Women: Findings From the Reach for Health Longitudinal Study

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We examined smoking and smoking cessation among 538 young inner-city women who had been followed from early adolescence to young adulthood. Results showed that 14.3% of these young women had smoked in middle school, 26.4% had smoked in high school, and 21.9% had smoked at age 19 or 20 years, when many were rearing children, pregnant, or considering pregnancy. Young women who were raising children were more likely than those who were not to currently smoke or to have smoked in the past. Partner violence victimization was an independent risk factor for continued smoking. If improvements in smoking cessation rates are to be achieved, public health efforts must address factors underlying early and continued smoking. (*Am J Public Health.* 2007;97:1408–1411. doi:10.2105/AJPH.2006.109397)

Smoking during pregnancy and child rearing is a well-documented risk for mothers as well as their children. Studies have shown that young African American and Hispanic women are less likely to smoke than their White counterparts, but they are more likely to become mothers at early ages and to live in economically distressed neighborhoods.[1,2] The combined risks associated with early childbearing and smoking (e.g., low birthweights) contribute to disparities in maternal and child health between African Americans and Hispanics and other groups.[3] Furthermore, increased rates of asthma and other disorders exacerbated by environmental tobacco smoke have been observed among children raised in inner cities.[4]

We examined relationships between reproductive and child-rearing status and smoking and smoking cessation among urban young women who took part in the Reach for Health longitudinal study.[5,6] Also, because young mothers are at elevated risk of intimate partner violence victimization,[7–9] we assessed whether victimization—which has been shown to have negative effects in terms of numerous other health problems[10–12]—is a risk factor for smoking and is a deterrent to cessation.

METHODS

The Reach for Health study was implemented in 1994 at 3 high-poverty middle schools in Brooklyn, New York, with the goal of gaining a better understanding of and addressing 3 major causes of premature morbidity and mortality: violence, early and unprotected sexual activity, and substance use. All young people attending the seventh and eighth grades over 2 consecutive years were eligible; 76% of the student body completed baseline surveys with written parental permission. The majority (70%) self-identified as African American; approximately 25% reported being Hispanic; and the remaining students were mostly of mixed racial/ethnic backgrounds.

Subsequent funding provided opportunities to initiate a longitudinal study and follow a sample of 1478 participants who had completed eighth-grade surveys and remained in New York City for high school. Fifty-two percent (n=768) of these students were young women, of whom 93% had completed a high school survey and 72% had completed a young adult survey at an average age of 19.7

years. The analyses described here included the 538 young women who completed eighth-grade, high school, and young adult surveys. At each wave, participants provided information on their smoking status. During the young adult survey, they also reported on their experiences (both over their lifetime and in the recent past) with intimate partner violence. Percentages of missing data within waves were low for all variables (less than 5%); mean substitution at the item level was used for imputation.

Recent smoking (within the past 30 days) in middle school and in high school, young adult smoking (recent smoking; regular smoking, defined as weekly or more frequently; and daily smoking), and cessation were cross tabulated according to reproductive status (pregnant or attempting to become pregnant vs not pregnant or attempting to become pregnant) and child-rearing status (raising children vs not raising children) as well as according to intimate partner physical violence victimization (victimization in past year, victimization prior to past year, no victimization). Levels of victimization assessed ranged from less severe (e.g., pushing, grabbing, shoving) to moderately severe (e.g., hitting, kicking, choking) and severe (e.g., threatening to use or using a knife or gun). Women endorsing any item were coded as having experienced victimization within the given time period.[7]

Stepwise logistic regression analyses were used to test associations between regular smoking in young adulthood and the study variables assessed. Associations with reproductive and child-rearing status and partner violence victimization were examined in step 1; associations with smoking history, in step 2; and associations with sociodemographic characteristics, including race/ethnicity (Hispanic or other), age (less than 20 years vs 20 years or older), education (less than high school vs high school or more), living arrangements (living or not living with a partner), and receipt of public assistance (yes or no), in step 3.

RESULTS

Approximately 22% of the respondents reported recent smoking during young adulthood; 16.7% of the respondents were regular smokers, and 11.0% smoked daily. Rates of recent smoking increased from middle to high school (from 14.3% to 26.4%). Regular smokers in young adulthood were more likely than were others to have reported smoking in middle school (27.8% vs 11.6%; $P<.001$) and, especially, high school (77.8% vs 16.1%; $P<.001$). Approximately 50% of the respondents reported having ever been pregnant, and 27.3% were raising children; 22.7% were either pregnant or attempting to become pregnant; and 4% were both rearing children and pregnant.

Table 1 provides descriptive information on the associations between regular smoking in young adulthood and potential correlates (smoking history, current reproductive and child-rearing status, partner violence victimization) and sociodemographic characteristics. Respondents who were raising children were significantly more likely than were those who were not to be smoking regularly; those who were pregnant or trying to become pregnant were neither more nor less likely to smoke. About one third of the small percentage (4%) of respondents who were already rearing children and were also pregnant or trying to become pregnant were regular smokers (data not shown). Young women who reported smoking in middle school but not high school were not at increased risk of smoking during young adulthood.

Young women who reported partner violence victimization, either in the past year or before that time, were more likely than were those who did not report such victimization to be regular smokers (25% vs 12.6%; $P<.01$). There was a correlation (data not shown) between victimization and child rearing: 42.2% of respondents who were rearing children reported a history of victimization, as compared with 32.2% of those who were not raising children ($P<.05$).

Of the young women who reported regular smoking, about one third (34.4%) indicated that they had attempted to quit during the past year, most often by using nicotine patches or gum; fewer than 10 had either attended a smoking cessation class or sought medical advice. There were no significant bivariate associations between attempts to quit smoking and pregnancy, child-rearing status, or partner violence victimization.

TABLE 1—Percentages of Young Women Reporting Regular Smoking, by Selected Characteristics: Reach for Health Longitudinal Study, Brooklyn, NY, 1994–2003

	Regular Smoking, %
Reproductive status	
Pregnant or attempting to become pregnant	12.3
Not pregnant or attempting to become pregnant	18.0
Child-rearing status**	
Raising children	25.9
Not raising children	13.2
Partner violence victimization*	
Past-year victimization	24.0
Past victimization	25.0
No victimization	12.6
Smoking history**	
Reported recent smoking in middle and high school	47.7
Reported recent smoking in high school only	50.0
Reported recent smoking in middle school only	12.1
Sociodemographic characteristics	
Age, y	
<20	19.3
≥20	15.5
Race/ethnicity	
Hispanic	18.9
Non-Hispanic	16.3
Educational level**	
Less than high school	29.3
High school or more	12.3
Living arrangements*	
Living with partner	26.9
Not living with partner	14.6
Receiving public assistance	
Yes	21.4
No	15.5

Note. Regular smoking defined as smoking weekly or more frequently; recent smoking defined as smoking within the past 30 days.
*$P<.01$; **$P<.001$ (χ^2 analysis).

Table 2 shows the results of the stepwise logistic regression analyses. In step 1, parenting and partner violence victimization were both significant risk factors for regular smoking. In step 2, when smoking history, a powerful predictor, was added, victimization remained significant, doubling the odds of

TABLE 2—Adjusted Odds Ratios (ORs) for Relationships Between Regular Smoking in Young Adulthood and Selected Characteristics of Young Adult Women: Reach for Health Longitudinal Study, Brooklyn, NY, 1994–2003

Characteristic	Step 1, OR (95% CI)	Step 2, OR (95% CI)	Step 3, OR (95% CI)
Pregnant or attempting to become pregnant	0.72 (0.39, 1.32)	0.52 (0.26, 1.06)	0.49 (0.23, 1.02)
Rearing children (vs not rearing children)	2.09 (1.29, 3.38)	1.54 (0.86, 2.77)	1.45 (0.74, 2.85)
Partner victimization in past year	1.96 (1.10, 3.48)	2.29 (1.14, 4.58)	2.23 (1.10, 4.52)
History of partner victimization[a]	2.31 (1.30, 4.10)	2.09 (1.04, 4.20)	2.15 (1.07, 4.35)
No partner victimization	1.00	1.00	1.00
Recent smoking (within past 30 days)			
Middle and high school		19.04 (8.48, 42.76)	18.50 (7.87, 43.52)
High school only		22.00 (11.37, 42.58)	21.09 (10.78, 41.24)
Middle school only		2.27 (0.67, 7.65)	2.56 (0.74, 8.82)
No history of smoking		1.00	1.00
Age ≥ 20 y (vs < 20 y)			1.24 (0.69, 2.21)
Hispanic ethnicity (vs non-Hispanic other)			0.65 (0.31, 1.38)
Less than high school education (vs more)			1.69 (0.92, 3.10)
Living with partner (vs not living with partner)			1.69 (0.85, 3.87)
Receiving public assistance (vs not receiving assistance)			0.67 (0.32, 1.42)

Note. CI = confidence interval.
[a]Not in the past year.

regular smoking; child-rearing status was no longer significant. These findings held when sociodemographic characteristics were entered. The odds ratio for pregnancy as a protective factor against regular smoking (0.49; 95% confidence interval [CI]=0.23, 1.02) was marginally significant at the P=.06 level.

DISCUSSION

This study highlights the need to address smoking prevention and cessation among urban African American and Hispanic young women living in economically disadvantaged communities, many of whom start families in their teens or early 20s. Nearly half of the women in our sample, most of whom were 19 or 20 years old, were rearing children, pregnant, or trying to become pregnant. Despite the health consequences of smoking for mothers and children, young women who were raising children were more likely than were those who were not to currently smoke and to have smoked in the past. Although there is some indication from our results that being pregnant or trying to become pregnant may serve as a protective factor against smoking, inner-city young mothers may be underestimating the consequences of smoking around children or may be finding it difficult to quit.

Not surprisingly, we found that young women who smoked during high school were much more likely to smoke in early adulthood. Those who stopped smoking before high school were not at elevated risk as young adults, suggesting the importance of early prevention and cessation programs. Indeed, our results suggest that smoking during adolescence at least partly explains why women who are mothers by the age of 19 or 20 years smoke. These young women were more likely to have engaged in early risk taking related to both substance use and sexual behavior, in turn leading to possible early pregnancy and child rearing as well as intimate partner violence victimization.[6,13]

When smoking history is taken into account, the relationship between experiences of partner physical violence victimization and smoking in young adulthood is striking, regardless of child-rearing status. That is, whether or not they are raising children, women who report victimization were more likely to smoke. However, it is notable that mothers were more likely to report such victimization than were women not raising children. This situation clearly indicates the need to address the multiple challenges women living in economically disadvantaged areas face and the ways in which these challenges affect the success of smoking prevention and cessation programs. ■

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Contributors

Both authors contributed to the design of the study, the analysis and interpretation of the data, and the writing of the article.

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Human Participant Protection

This study was approved by the institutional review boards of Education Development Center, Inc, and the New York City Public Schools. When participants were minors, parents provided written permission and the participants provided written assent. When participants reached 18 years of age, they provided their own written consent.

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