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Lifetime cigarette smoking and breast cancer risk in young women: Racial and socioeconomic disparities in risk in the Young Women's Health History Study

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The etiology of breast cancer (BC) among young women is not well understood. Recent studies have suggested that tobacco exposure is associated with an increased risk of BC but few studies have evaluated risk among women under age 50 or racial and socioeconomic disparities in risk. We hypothesized that racial and socioeconomic differences in age at smoking initiation and lifetime cigarette smoking contribute to disparities in BC risk among young women.

Data were examined from a population-based case-control study in women under 50 years of age, the Young Women's Health History Study. In total, 1,812 women with invasive BC (1,130 Non-Hispanic (NH) White, 682 NH Black) and an area-based sample of 1,381 control women (716 NH White, 665 NH Black), frequency matched to cases by five-year age group, study site and race were identified and interviewed from the Los Angeles County and Metropolitan Detroit SEER registry areas. Lifetime smoking history (including age at initiation, duration, and frequency) were collected from structured in-person interviews. Survey-weighted multivariable logistic regression was used to evaluate the association between lifetime cigarette smoking and BC risk adjusted for matching and known BC risk factors. Additionally, cross-product interaction terms of smoking exposure by race and by socioeconomic position (SEP; based on household percent poverty) were evaluated by Wald's test.

Among controls, 36.5% reported ever smoking at least 1 cigarette a day for at least 6 months in their lifetime with White women compared to Black women (38.3% vs. 32.3%) and women of lower SEP (<150% of poverty) compared to higher SEP ($\geq 150\%$ of poverty) (50.4% vs. 31.5%) being more likely to have ever smoked. In adjusted models, those who ever vs. never smoked were 1.20 times as likely to develop BC; findings were marginally significant (95% confidence interval (CI): 0.99-1.46, $p=0.07$). No differences were found by race or SEP, nor was there a consistent association with BC risk for duration of smoking history (in pack-years) or average number of cigarettes smoked per day.

Age at smoking initiation (never smoker, initiated at age <25 years, initiated at age ≥ 25 years) was significantly positively associated with BC risk (p trend=0.02). Smoking initiated at 25 years or older was associated with a 78% increased risk of BC compared to never smokers (95% CI: 1.15-2.77). A positive association between age at initiation and BC risk was observed among White (p trend=0.048), but not Black women. A marginally significant increased risk with age at initiation was observed among women of higher SEP (p trend=0.05) but not among those of lower SEP.

We found evidence that smoking is associated with an increased risk of BC in young women, especially among those who started smoking at an older age. Despite efforts to reduce smoking, the prevalence of smoking remains highest among people of low socioeconomic position, as we found. Encouraging women not to initiate smoking is important to reduce BC risk among women under age 50.