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Maternal Smoking and Down Syndrome by Maternal Race

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Background

- Down Syndrome represents an important health issue in the United States
- The percentage of women becoming pregnant at an advanced age is fairly high, and older maternal age is associated with Down Syndrome

Purpose

- To investigate the relationship between maternal smoking and Down Syndrome, by maternal race

Study Design

- Population-based case-control using US birth certificate data from 1996
- All infants with Down Syndrome (n=1360) and a random sample of infants without Down Syndrome (n=5045) were selected

Data Analysis

- Logistic regression analysis was used to estimate the relative risk of the relationship between maternal smoking and Down Syndrome, and to assess confounding and effect modification

Maternal Characteristics

	Down Syndrome	No Down Syndrome
	#	#
Maternal education < 12 years	233	1081
Maternal age ≥ 35 years	833	4445
Maternal race Black	1219	4157
Alcohol consumption Yes	32	73
Gestational age < 37 weeks	280	579

Smoking and Down Syndrome by Maternal Race

	Down Syndrome	No Down Syndrome	OR	95% CI
	#	#		
Black				
No	117	800	1.0	Referent
Yes	23	84	1.9	(1.1-3.1)
White				
No	1055	3493	1.0	Referent
Yes	146	633	0.8	(0.6-0.9)

Number of Cigarettes Smoked and Down Syndrome by Race

	Down Syndrome	No Down Syndrome	OR	95% CI
	#	#		
Black				
No	117	800	1.0	Referent
0-9	7	47	1.6	(0.9-3.0)
≥ 10	15	33	2.8	(1.1-6.9)
White				
No	1055	3493	1.0	Referent
0-9	45	178	0.8	(0.6-1.0)
≥ 10	97	426	0.8	(0.6-1.1)

Limitations

- Validity of birth certificate for reporting of Down Syndrome
- Social desirability bias may have resulted in misclassification of maternal smoking

Strengths

- Population-based meaning the results are generalizable to the US
- Sufficient power to detect an association

Conclusions

- Black women who smoked presented an elevated risk of delivering an infant with Down Syndrome
- Maternal race should be considered in future studies as an effect modifier of the relationship between maternal smoking and Down Syndrome

Implications

- Regardless of maternal race, women should be counseled against smoking during pregnancy due to its well-known association with adverse birth outcomes