



Does race moderate the effects of reduced nicotine content cigarettes among smokers?

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Introduction

Reduced nicotine content (RNC) cigarettes may reduce nicotine dependence and facilitate smoking cessation, but the effect may vary in population subgroups. We examined racial differences in nicotine and smoking reduction in smokers switching to RNC cigarettes. This analysis focused on whether race (Black vs. White) moderated the effects of RNC (vs. UNC) cigarettes.

Methods

Study Design: Secondary analysis of 2 pooled randomized clinical trials with smokers with low socioeconomic status or a mood/anxiety disorder

Both trials randomized participants into a usual nicotine content group (UNC: nicotine content=11.6 mg/cigarette) or gradual nicotine reduction group (RNC: nicotine content=11.6 to 0.2 mg/cigarette) over 18 weeks.

Study Sample: 403 adult smokers; Blacks (n=104), Whites (n=299)

Sites: Penn State University, Hershey, PA; George Washington University, Washington, D.C.; Massachusetts General Hospital, Boston, MA

- Adjusted linear regression models examined race by treatment interaction effect on outcomes at week 18 (post-randomization). Mean differences (MD) compared treatment groups within race. A p-value ≤ 0.05 was considered statistically significant. Mean values are shown in Figure 1.

Results

At baseline, Blacks (n=104) had lower CPD (p=0.02), lower CO (p<0.001), and lower cotinine (p=0.04) than Whites (n=299) [Table 1].

Cotinine was lower in the RNC group compared to the UNC group across both racial groups at 18 weeks, but more so among Whites. Reductions in CPD and FTCD scores were similar in Black and White smokers and neither interaction test was significant [Table 2]. Unadjusted models provided the same results.

Conclusions

Black and White smokers experience similar smoking outcomes when using RNC cigarettes, except for levels of cotinine.

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Table 1. Sample Characteristics (n=403)

Baseline Characteristics	Black (N=104)	White (N=299)	Mean difference (95% CI)	p-value
Age (SD)*	50.19 (8.59)	41.96(12.07)	8.24 (6.08-10.39)	<0.0001
Male (%)	59(56.7%)	117(39.1%)	N/A	<0.002
Menthol (%)	95(91.4%)	134(44.8%)	N/A	<0.0001
Education (%)				
≤ High school degree	54(51.9%)	153(51.2%)	N/A	
> High school degree	50(48.1%)	146(48.8%)	N/A	0.90
Cigarettes per day (SD)*	21.46 (10.16)	25.34(13.51)	-3.88(-7.02, -0.74)	0.02
Fagerstrom Test for Cigarette Dependence (FTCD)*	5.86(2.16)	6.34(2.22)	-0.49(-0.98,0.01)	0.05
Exhaled Carbon Monoxide ppm (SD)*	22.56(11.60)	36.34(16.89)	-13.78(-17.51, -10.04)	<0.001
Cotinine ng/ml (SD)*	229.9 (141.6)	273.8(151.2)	-43.84(-86.22, -1.47)	0.04

*Values are presented as means.

Table 2. Linear regression models with race by treatment interaction test

Outcome	Interaction test (p-value)	Black Mean difference* (95% CI)	p-value	White Mean difference* (95% CI)	p-value
Cotinine	0.05	-117.22 (-198.56, -35.89)	<0.002	-187.34(-234.43, -140.24)	<0.001
Total CPD	0.99	-4.33(-9.28,0.62)	0.11	-4.35(-7.45, -1.25)	<0.002
Exhaled CO	0.45	-4.00(-11.41,3.41)	0.42	-6.56(-11.21, -1.91)	<0.002
FTCD	0.61	-0.81(-1.66,0.04)	0.06	-1.00(-1.54, -0.47)	<0.001

*Mean Differences between the RNC vs. UNC groups at week 18 post randomization in black and white participants. Each outcome model is adjusted for baseline levels of outcome, site, menthol status, gender, and age. Total CPD equals study CPD plus non-study CPD

Figure 1. Mean values of cotinine, cigarettes per day, exhaled carbon monoxide (CO), and Fagerstrom Test for Cigarette Dependence (FTCD) by race and treatment

