RESEARCH REPORT

Workplace and home smoking restrictions and racial/ethnic variation in the prevalence and intensity of current cigarette smoking among women by poverty status, TUS-CPS 1998–1999 and 2001–2002

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Study objective: Recognition of the health consequences of exposure to environmental tobacco smoke has led government agencies and many employers to establish policies that restrict cigarette smoking in public and workplaces. This cross sectional study examines the association of workplace smoking policies and home smoking restrictions with current smoking among women.

Design: Participants were employed US women ages 18–64 who were self respondents to the 1998–1999 or 2000–2001 tobacco use supplement to the current population survey supplements. Cross tabulations and multivariate logistic regression analyses examine the association of selected demographic characteristics, occupation, income, workplace and home smoking policies/restrictions with current smoking, consumption patterns, and quit attempts among women by poverty level for five race/ethnic groups.

Main results: The prevalence of either having an official workplace or home smoking policy that completely banned smoking increased with increased distance from the poverty level threshold. A complete ban on home smoking was more frequently reported by African American and Hispanic women although Hispanic women less frequently reported an official workplace smoking policy. In general, policies that permitted smoking in the work area or at home were associated with a higher prevalence of current smoking but this varied by poverty level and race/ethnicity. Home smoking policies that permitted smoking were associated with lower adjusted odds of having a least one quit attempt for nearly all poverty level categories but there was no association between having one quit attempt and workplace policies.

Conclusion: Home smoking policies were more consistently associated with a lower prevalence of current smoking irrespective of poverty status or race/ethnicity than workplace policies. These findings underscore the importance of examining tobacco control policies in multiple domains (work and home) as well as by race/ethnicity and socioeconomic position.

Exposure to environmental tobacco smoke (ETS) has been linked to a variety of chronic illnesses including cancer,[1] cardiovascular disease,[2] asthma,[3] and chronic obstructive pulmonary disease[4]; is causally associated with lung cancer in non-smoking adults[5] and; is classified as a known human carcinogen.[6 7] Data from the 1991 national health interview survey show adult never smokers exposed to ETS more frequently report one or more days of restricted work activity, bed confinement, and work absence than adult never smokers not exposed.[8] People who work in blue collar occupations who are disproportionately subjected to workplace toxins such as ETS[9 10] are frequently people with lower paying jobs.[11]

The health consequences of exposure to ETS have led government agencies and many employers to establish policies that restrict cigarette smoking in public areas and workplaces. In addition to reducing workplace exposure to ETS smoking restrictions have been associated with a reduction in the prevalence of smoking and in the number of cigarettes smoked among workers who do not completely quit. For example, a 10% reduction in daily cigarette consumption occurred in the first two years at worksites participating in the healthy workers project that changed from non-restrictive to restrictive smoking policies.[12] Data from the 1991 tobacco use supplement to the current population survey (TUS-CPS) show that in general, a complete ban on smoking in the workplace is associated with a reduction in daily cigarette consumption for most race/ethnic groups, ages, and education levels although reductions were greater for non-Hispanic white men, those ages 40–65 or who had less than a high school education.[13] Workplace smoking restrictions may also be associated with a lower overall prevalence of current smoking, higher lifetime quit rates, more recent quit attempts, and lower daily cigarette consumption.[12]

Although, the potential health benefits of a smoke free workplace are clear[2] the presence of policies that restrict smoking in the workplace is not uniform and may vary by geographical region, occupation, and industry.[14] Even at workplaces with clean indoor air policies specific classes of workers may still be disproportionately exposed to ETS in the workplace. Aakko *et al* found that blue collar workers may have higher exposure to ETS in manufacturing and assembly workplaces because smoking restrictions are often not strictly enforced in these settings.[15] Although tobacco control efforts that promote smoke free homes may give family members leverage to influence others not to smoke in the home[24] the prevalence of home smoking restrictions still vary widely

Abbreviations: TUS-CPS, tobacco use supplement to the current population survey supplement; ETS, environmental tobacco smoke; SES, socioeconomic status

Table 1 Demographic characteristics and smoking history, of female civilian TUS-CPS participants age 18–64 by race/ethnic group, 1998–2002 (unweighted)

Variable	African American (n = 8487)	American Indian/ Alaskan Native (n = 886)	Asian/Pacific Islanders (n = 2612)	Hispanic (n = 5845)	White (n = 65136)	p Value
Age group						
18–24	11.2	12.9	10.4	16.0	9.4	<0.001
25–44	56.7	55.8	57.8	62.1	51.9	
45–64	32.1	31.4	31.9	21.9	38.7	
Education (years)						
<12	10.3	11.2	6.6	25.7	4.8	<0.001
12	32.2	31.8	20.0	31.9	30.4	
13–15	35.4	40.7	25.7	27.5	32.3	
16+	22.2	16.3	47.7	15.0	32.4	
Income						
<$25000	37.0	37.8	18.4	35.2	16.9	<0.001
$25000–$49999	35.1	33.3	29.1	36.1	32.1	
$50000 or more	27.9	28.9	52.5	28.7	51.0	
Marital status						
Married	34.0	51.0	63.7	57.4	63.1	<0.001
Widowed	14.6	4.2	2.6	1.8	2.4	
Divorced/separated	13.9	20.5	10.5	17.3	16.9	
Never married	38.7	24.3	23.2	23.5	17.6	
Poverty level						
Below the poverty level	16.8	19.6	6.8	16.9	4.8	<0.001
100% to 124% of the poverty level	5.8	5.9	3.5	6.9	2.4	
125% to 149% of the poverty level	4.7	5.4	3.5	7.0	2.2	
150% or more above the poverty level	72.8	69.1	86.2	69.3	90.6	
Occupation						
Professional/managerial	33.1	33.9	44.5	25.2	44.4	<0.001
Sales and administrative support	35.5	36.9	30.9	37.1	36.8	
Labourers	11.0	8.6	10.3	17.7	7.0	
Service	20.4	20.7	14.4	20.0	11.8	
Smoking history						
Current smoker (includes occasional smokers)	18.6	36.1	10.1	13.1	22.7	<0.001
Former smoker	10.3	17.5	7.4	9.8	20.5	
Never smoker	71.1	46.4	82.6	77.1	56.8	

among population subgroups.[25] Research on the influence of workplace bans on smoking prevalence and the association with ETS exposure, for the most part, have been conducted outside of the continental USA.[16–22] Consequently, little is known about workplace smoking policies and women's smoking among the socioeconomically diverse US population. Little is also known about the impact of home smoking restrictions on the prevalence of current smoking and cigarette consumption patterns in general but particularly among low socioeconomic status (SES) racial/ethnic minority women.

Persistent disparities exist in overall tobacco use and quit behaviours of smokers who are categorised as having low SES.[22–27] Differences in tobacco use therefore, probably contribute to the tobacco related health disparities seen among these populations. We examine the association between workplace smoking policies, home smoking restrictions, and the prevalence of current smoking among women from diverse socioeconomic and racial/ethnic backgrounds. Results from this analysis will help identify strategies that may be more appropriate for reducing the prevalence of current smoking among women from specific socioeconomic and/or race/ethnic groups.

METHODS

Data for this analysis were obtained from the 1998–1999 and the 2001–2002 TUS-CPS.[28] Data from the surveys were combined to increase the sample size for subgroup analyses. This includes data from the September 1998, January 1999, May 1999, June 2001, November 2001, and February 2002 adminstrations of the survey. Overall response rates to the TUS-CPS are about 80% but include proxy and self respondents. The CPS is a national population based survey of the US population administered by the Census Bureau for the Bureau of Labor Statistics. The main survey is conducted monthly in about 50 000 households using a multistage probability sampling design to collect employment and demographic data on the civilian non-institutional population age 16 and older. About 75% of respondents participate in a telephone survey and 25% in a in-person interview. The TUS-CPS is sponsored by the National Cancer Institute and the Centers for Disease Control to periodically collect data on the prevalence of cigarette smoking, and the use of cigar, pipe, chewing tobacco and snuff, smoking history, and cigarette consumption patterns. The TUS-CPS also collects data on smoking quit attempts, intention, and advice to quit smoking, workplace and home smoking policies and attitudes about smoking.

Inclusion/exclusion criteria

Overall, there were 162 730 women ages 18–64 who were self respondents to the 1998–1999 and 2000–2001 TUS-CPS. Women who were unemployed (5406) or who were not in the work force (not seeking employment) (42 657) were excluded because they did not work. Just over 31 100 women were excluded because they either refused, did not know, or did not answer either the question on home or work smoking bans. Proxy respondents were excluded because they were not asked about the workplace and home smoking policies of the people for whom they provided responses. After these exclusions a total of 82 966 women who were still eligible and are included in this analysis.

Demographic characteristics

Sociodemographic data were obtained from the CPS. These included data on age, race/ethnicity, education, income, employment status, and occupation.

Table 2 Workplace and home smoking policies of female civilian TUS-CPS participants age 18–64 by poverty level and race/ethnicity, 1998–2002 (weighted)

Variable	At or below the poverty level (n = 3321972)	100%–124% of the poverty level (n = 1411878)	125%–149% of the poverty level (n = 1304493)	150% or more above the poverty level (n = 37134264)	p Value
Overall sample					
Workplace smoking policy					
Smoking not permitted in any public/common or work area	61.5	65.1	65.7	76.6	
Smoking permitted in public/common but not work area	10.3	9.4	11.1	7.6	<0.001
Smoking permitted in all public/common and work areas	7.3	7.2	5.2	4.1	
Smoking permitted in work but not public/common areas	1.6	1.8	1.6	1.4	
No smoking policy at work	19.1	16.5	16.2	10.0	
Other	0.2	0.1	0.2	0.2	
Home smoking policy					
Smoking not permitted anywhere	56.3	57.0	60.3	67.3	<0.001
Smoking permitted as some places or some times	22.4	22.5	20.0	17.9	
Smoking is permitted anywhere at anytime	21.3	20.4	19.7	14.8	
African Americans					
Workplace smoking policy					
Smoking not permitted in any public/common or work area	61.5	65.2	69.0	76.0	
Smoking permitted in public/common but not work area	11.3	11.2	12.6	9.3	<0.001
Smoking permitted in all public/common and work areas	7.9	6.8	4.2	4.9	
Smoking permitted in work but not public/common areas	2.1	1.7	1.0	1.3	
No smoking policy at work	17.0	15.1	12.6	8.3	
Other	0.2	NA	0.6	0.2	
Home smoking policy					
Smoking not permitted anywhere	54.1	57.8	64.1	67.6	<0.001
Smoking permitted as some places or some times	26.2	26.1	20.8	19.0	
Smoking is permitted anywhere at anytime	19.7	16.1	15.2	13.5	
American Indian/Alaska Native					
Workplace smoking policy					
Smoking not permitted in any public/common or work area	53.6	51.1	47.8	73.0	
Smoking permitted in public/common but not work area	14.4	19.0	25.4	9.8	0.107
Smoking permitted in all public/common and work areas	5.1	6.0	2.2	4.6	
Smoking permitted in work but not public/common areas	3.2	10.6	5.6	0.9	
No smoking policy at work	23.7	13.4	19.0	11.6	
Other	NA	NA	NA	0.2	
Home smoking policy					
Smoking not permitted anywhere	49.0	60.9	41.6	62.7	0.256
Smoking permitted as some places or some times	31.9	20.9	21.2	18.4	
Smoking is permitted anywhere at anytime	19.2	18.2	37.2	18.9	
Asian Americans/Pacific Islander					
Workplace smoking policy					
Smoking not permitted in any public/common or work area	57.4	77.6	66.5	74.9	
Smoking permitted in public/common but not work area	6.6	9.9	10.9	8.3	<0.001
Smoking permitted in all public/common and work areas	7.0	2.5	6.7	3.5	
Smoking permitted in work but not public/common areas	NA	NA	NA	1.3	
No smoking policy at work	29.0	10.0	15.9	11.6	
Other	NA	NA	NA	0.4	
Home smoking policy					
Smoking not permitted anywhere	69.5	65.7	76.3	80.6	<0.001
Smoking permitted as some places or some times	21.3	21.5	17.5	14.2	
Smoking is permitted anywhere at anytime	9.2	12.8	6.3	5.3	
Hispanic					
Workplace smoking policy					
Smoking not permitted in any public/common or work area	62.9	66.5	64.6	73.7	
Smoking permitted in public/common but not work area	9.3	6.1	7.7	7.6	<0.001
Smoking permitted in all public/common and work areas	6.8	5.6	6.7	4.6	
Smoking permitted in work but not public/common areas	1.2	1.0	1.7	1.1	
No smoking policy at work	19.8	20.8	19.1	12.5	
Other	0.1	NA	0.3	0.5	
Home smoking policy					
Smoking not permitted anywhere	76.1	76.5	80.9	78.3	0.499
Smoking permitted as some places or some times	14.8	15.1	12.3	14.0	
Smoking is permitted anywhere at anytime	9.1	8.4	6.8	7.7	
White					
Workplace smoking policy					
Smoking not permitted in any public/common or work area	61.5	63.8	65.2	77.1	
Smoking permitted in public/common but not work area	10.2	9.4	11.6	7.3	<0.001
Smoking permitted in all public/common and work areas	7.2	8.4	4.9	4.0	
Smoking permitted in work but not public/common areas	1.6	2.1	1.8	1.5	
No smoking policy at work	19.3	16.1	16.4	9.9	
Other	0.2	0.1	0.1	0.2	
Home smoking policy					
Smoking not permitted anywhere	48.0	48.2	49.2	65.5	<0.001
Smoking permitted as some places or some times	23.1	23.9	23.2	18.3	
Smoking is permitted anywhere at anytime	28.9	28.0	27.6	16.1	

NA, not available.

Table 3 Multivariate logistic regression analysis of current smoking among the employed female civilian US population by workplace smoking policy, TUS-CPS 1998–2002

Variable	At or below the poverty level (n = 5875)	100%–124% of the poverty level (n = 2602)	125%–149% of the poverty level (n = 2382)	150% or more above the poverty level n = 71917)
Race/ethnicity				
African American	0.40 (0.32,0.49)	0.37 (0.26,0.51)	0.51(0.35,0.76)	0.59 (0.54,0.65)
American Indian/Alaska Native	1.19 (0.63,2.22	1.07 (0.40,2.89)	1.55 (0.43,5.58)	1.14 (0.80,1.62)
Asian American/Pacific Islander	0.41 (0.23,0.72)	0.47 (0.18,1.21)	0.35 (0.14,0.86)	0.46 (0.38,0.56)
Hispanic	0.29 (0.23,0.36)	0.31 (0.19,0.48)	0.35 (0.24,0.50)	0.61 (0.54,0.69)
Non-Hispanic white	1.00	1.00	1.00	1.00
Age group				
18–24	1.05 (0.78,1.41)	2.42 (1.51,3.88)	1.76 (1.07,2.90)	1.29 (1.14,1.46)
25–44	1.51 (1.19,1.92)	2.31 (1.73,3.08)	2.36(1.66,3.37)	1.50 (1.42,1.58)
45–64	1.00	1.00	1.00	1.00
Education (years)				
<12	3.31 (2.19,4.98)	2.85 (1.60,5.09)	1.53 (0.72,3.24)	2.89 (2.55,3.27)
12	2.64 (1.78,3.91)	2.20 (1.24,3.90)	1.54 (0.85,2.80)	2.39 (2.23,2.57)
13–15	2.76 (1.84,4.14)	2.23 (1.23,4.04)	1.20 (0.62,2.33)	1.91 (1.77,2.06)
16+	1.00	1.00	1.00	1.00
Marital status				
Married	0.69 (0.54,0.89)	1.02 (0.68,1.54)	0.82 (0.55,1.22)	0.72 (0.67,0.78)
Widowed	1.26 (0.75,2.13)	1.29 (0.70,2.38)	2.54 (1.10,5.86)	0.99 (0.87,1.15)
Divorced/separated	1.45 (1.15,1.82)	1.80 (1.31,2.49)	1.46 (0.98,2.18)	1.45 (1.32,1.58)
Never married	1.0	1.0	1.0	1.0
Occupation				
Professional/managerial	1.00	1.00	1.00	1.00
Sales and administrative support	0.95 (0.71,1.28)	0.85 (0.55,1.32)	0.94 (0.64,1.39)	0.93 (0.87,0.98)
Labourers	0.83 (0.60,1.15)	0.56 (0.34,0.92)	1.27 (0.80,2.00)	0.96 (0.87,1.06)
Service	1.14 (0.88,1.49)	0.91 (0.60,1.39)	1.09 (0.71,1.68)	1.11 (1.02,1.22)
Workplace smoking policy				
No official smoking policy	1.00	1.00	1.00	1.00
No smoking in work area	1.03 (0.84,1.26)	0.98 (0.71,1.35)	0.69 (0.47,1.02)	0.80 (0.74,0.87)
Smoking permitted in some/all places at work	1.30 (0.98,1.71)	0.98 (0.62,1.55)	0.87 (0.54,1.40)	1.01 (0.91,1.11)
Home smoking policy				
Smoking not permitted anywhere	1.00	1.00	1.00	1.00
Smoking permitted as some places or some times	5.71 (4.83,6.74)	7.17 (5.32,9.67)	6.07 (4.41,8.37)	6.44 (6.06,6.84)
Smoking is permitted anywhere at anytime	14.99 (12.14,18.51)	20.36 (14.60,28.40)	13.45(9.93,18.22)	15.98 (15.05,16.97)

Occupation classifications

Occupations were coded using the standard occupational classification.[29] Occupations were then grouped into 11 major occupational groups based on US census occupation categories established in the *Occupational Classification System Manual* (OSCM) for use in the national compensation survey.[30] For this analyses occupation was collapsed into professional/managerial, sales and administrative support (MOG C- D), labourers (MOG E-H), and service (MOG K, for example, personal appearance, childcare, funeral service, and gaming workers, etc) categories.

Poverty level

In many studies, annual household or family income is provided without information regarding how many people are supported by that income. We use categories based on the poverty threshold in an attempt to overcome this limitation because they provide more information about the income available to families of a specified sized. For example, a family of three with an annual income of $30 000 is likely to have a very different demand on their resources than a family of six with an annual income of $30 000.

The poverty threshold represents the income determined by the federal government to be required to provide for the basic needs for families of a specified size.[31] Families and persons within families with resources below the established threshold are considered to be living in poverty. Poverty thresholds are adjusted for inflation annually using the consumer price index and are the same for all families of specified size.[32] For this analysis we constructed categories based on poverty ratios calculated as a ratio of family income to the weighted average poverty thresholds for families of a specified size as calculated by the US Census Bureau[33] for the specific year for which the TUS-CPS data were collected. Families with incomes 125% of the poverty threshold (as shown by the poverty ratio) are families with incomes 25% over the amount determined to be required for families of the same size to meet basic needs. Conversely, families with incomes 75% of the poverty threshold have incomes that are 25% less than that determined to be required for families of the same size to meet basic needs.

Smoking status

Current smoking status was ascertained by the following questions: (1) Have you ever smoked at least 100 cigarettes in your entire life? (2) Do you now smoke cigarettes every day, some days, or not at all? (3) On average, how many cigarettes do you smoke per day? Cigarette smoking status was coded as current, former, and never smoker. All current smokers were further classified by the frequency and number of cigarettes smoked. (Note: all smokers had to have ever smoked for at least six months to calculate cigarette consumption). Heavy smokers were classified as those who smoked 20 or more cigarettes per day. Former smokers had previously smoked at least 100 cigarettes during their lifetime but were not current smokers. Never smokers reported not ever having smoked at least 100 cigarettes. The complete TUS-CPS questionnaire and technical documentation are available elsewhere.[34 35]

Quit attempts

Quit attempts were examined for participants who reported current daily smoking. The number of quit attempts was assessed by response to the following questions: (1) During the past 12 months have you stopped smoking for one day or longer because you were trying to quit smoking? (2) How many times during the past 12 months have you stopped

Table 4 Multivariate logistic regression analysis of current smoking among the employed female civilian US population by race/ethnic group, TUS-CPS 1998–2002

Variable	African-American (n = 8467)	American Indian/ Alaskan Native (n = 885)	Asian/Pacific Islander(n = 2600)	Hispanic (n = 5826)	Non-Hispanic white (n = 64998)
Age group					
18–24	0.44 (0.34,0.57)	0.79 (0.28,1.74)	2.45 (1.14,5.25)	0.73 (0.51,1.05)	1.55 (1.38,1.74)
25–44	0.92 (0.78,1.08)	1.15 (0.66,2.02)	1.87 (1.24,2.84)	1.41 (1.15,1.72)	1.65 (1.56,1.74)
45–64	1.00	1.00	1.00	1.00	1.00
Education (years)					
<12	2.01 (1.45,2.80)	8.17 (3.23,20.71)	1.54 (0.66,3.58)	2.21 (1.38,3.55)	3.14 (2.75,3.58)
12	1.75 (1.34,2.29)	3.09 (1.27,7.49)	2.76 (1.63,4.68)	2.10 (1.35,3.25)	2.44 (2.26,2.64)
13–15	1.51 (1.19,1.91)	3.10 (1.33,7.24)	1.83 (1.09,3.06)	1.96 (1.32,2.91)	1.98 (1.82,2.15)
16+	1.00	1.00	1.00	1.00	1.00
Marital status					
Married	0.73 (0.59,0.90)	0.63 (0.34,1.17)	0.52 (0.31,0.86)	0.55 (0.42,0.72)	0.78 (0.72,0.85)
Widowed	1.22 (0.80,1.85)	0.98 (0.34,2.80)	0.36 (0.08,1.70)	0.59 (0.28,1.25)	1.11 (0.95,1.29)
Divorced/separated	1.34 (1.13,1.58)	1.42 (0.70,2.86)	1.17 (0.60,2.30)	1.31 (0.95,1.79)	1.53 (1.40,1.68)
Never married	1.0	1.0	1.0	1.0	1.0
Poverty level					
Below the poverty level	1.17 (0.91,1.50)	1.47 (0.72,3.01)	1.21 (0.66,2.22)	0.72 (0.55,0.93)	1.25 (1.11,1.42)
100% to 124% of the poverty level	0.91 (0.67,1.24)	1.34 (0.50,3.58)	1.35(0.56,3.29)	0.71 (0.48,1.04)	1.21 (1.03,1.41)
125% to 149% of the poverty level	1.15 (0.78,1.71)	1.83 (0.60,5.62)	1.19 (0.47,3.00)	0.77 (0.54,1.10)	1.15 (0.99,1.34)
150% or more above the poverty level	1.00	1.00	1.00	1.00	1.00
Occupation					
Professional/managerial	1.00	1.00	1.00	1.00	1.00
Sales and administrative support	0.99 (0.81,1.21)	0.63 (0.34,1.18)	0.94 (0.57,1.55)	0.86 (0.65,1.13)	0.93 (0.88,0.99)
Labourers	0.85 (0.66,1.11)	0.37 (0.15,0.92)	0.54 (0.24,1.20)	0.66 (0.44,0.99)	1.03 (0.93,1.13)
Service	1.09 (0.85,1.39)	0.70 (0.35,1.40)	1.16 (0.57,2.34)	0.96 (0.67,1.38)	1.13(1.03,1.23)
Workplace smoking policy					
No official smoking policy	1.00	1.00	1.00	1.00	1.00
No smoking in work area	0.96 (0.73,1.26)	0.94 (0.50,1.77)	1.16 (0.73,1.84)	0.96 (0.71,1.30)	0.78 (0.72,0.85)
Smoking permitted in some/all places at work	1.15 (0.83,1.60)	0.58 (0.29,1.31)	1.79 (1.03,3.10)	1.15 (0.83,1.59)	0.96 (0.87,1.07)
Home smoking policy					
Smoking not permitted anywhere	1.00	1.00	1.00	1.00	1.00
Smoking permitted as some places or some times	11.12 (9.41,13.14)	3.79 (2.37,6.06)	7.28 (4.85,10.92)	7.15 (5.72,8.94)	5.86 (5.51,6.22)
Smoking is permitted anywhere at anytime	28.83 (23.76,34.98)	12.56 (7.41,21.30)	21.50 (12.64,36.57)	13.63 (10.32,18.00)	14.76 (13.91,15.66)

Data weighted to adjust for selection probability.

smoking for one day or longer because you were trying to quit?

Workplace and home smoking policies

Data on workplace smoking policies were obtained from responses to the following questions: (1) Does your place of work have an official policy that restricts smoking in any way? (2) Which of these best describes your place of work's smoking policy for indoor public or common areas such as, lobbies, rest rooms, and lunchrooms? (a) not allowed in public areas (b) allowed in some public areas (c) allowed in all public areas. (3) Which of these describes your place of work's smoking policy for work areas? (a) not allowed in work areas (b) allowed in some work areas (c) allowed in all work areas.

Home smoking rules were ascertained by response to the following question: Which statement best describes the rules about smoking in your home? (a) smoking not permitted anywhere (b) smoking permitted some times at some places (c) smoking permitted anywhere at any time. People who report that smoking is not permitted anywhere in their home are considered to have a home ban against smoking.

Statistical analyses

Data analyses were performed with SUDAAN (release 9, Research Triangle Institute, Research Triangle Park, NC) and with the exception of the sample demographic data presented in table 1 were weighted to adjust for the probability of selection using replicate weights. The χ^2 test for homogeneity of proportions was used to assess differences in the distribution of categorical variables among various race/ethnic groups and by four poverty level categories (that is, below poverty level, 100%–124% of poverty level, 125%–149% of poverty level, and 150% of poverty level). Differences in the mean and median values of continuous variables were assessed with the Student's *t* test and the analysis of variance.

To examine the influence of demographic characteristics, occupation, industry, income, workplace and home smoking policies/restriction on current smoking status, smoking consumption patterns, and quit attempts among women by SES and race/ethnicity, we performed multivariate logistic regression analyses stratified by poverty ratio and race/ethnicity for each of three outcome variables. The outcome variables were current smoker (Y/N), heavy smoker (Y/N), and at least one quit attempt in the past year (Y/N) for current smokers only. The independent variables examined varied depending upon the stratification variable used but generally consisted of race/ethnicity, poverty level, age group, education, occupation, workplace smoking policy (mutually exclusive workplace smoking policy categories, no workplace smoking policy, smoking permitted in the work area only, smoking permitted in all or some places at work) and home smoking restrictions (that is, smoking not permitted anywhere, smoking permitted some times at some places, and smoking permitted anywhere at any time). The log-likelihood test was used to determine goodness of fit.

RESULTS

Demographic characteristics

Of the total of 82 966 employed female participants in the 1998–1999 and 2001–2002 TUS-CPS surveys eligible to be included in this analysis 78.5% were non-Hispanic white, 10.2% were African American (AA), 7.0% were Hispanic, 3.1% were Asian/Pacific Islanders (PI), and about 1% were American Indian (AI)/Alaska Natives (AN). Overall 7.1% of participants in this analysis had family incomes that were considered to be below the poverty level, 3.1% were

Table 5 Multivariate logistic regression analysis of heavy smoking among the currently smoking employed female civilian US population by poverty level, TUS-CPS 1998–199 and 2001–2002

Variable	At or below the poverty level (n = 1860)	100%–124% of the poverty level (n = 777)	125%–149% of the poverty level (n = 679)	150% or more above the poverty level (n = 14072)
Race/ethnicity				
African American	0.28 (0.20,0.40)	0.28 (0.16,0.50)	0.41 (0.19,0.87)	0.24 (0.21,0.29)
American Indian/Alaska Native	0.22 (0.10,0.50)	0.34 (0.56,1.61)	2.21 (0.56,8.75)	0.71 (0.45,1.10)
Asian American/Pacific Islander	0.30 (0.05,1.86)	0.52 (0.14,1.97)	0.15 (0.03,0.87)	0.35 (0.21,0.58)
Hispanic	0.13 (0.07,0.25)	0.17 (0.07,0.41)	0.15 (0.06,0.38)	0.24 (0.18,0.33)
Non-Hispanic white	1.00	1.00	1.00	1.00
Age group				
18–24	0.42 (0.28,0.64)	0.28 (0.13,0.60)	1.17 (0.51,2.69)	0.40 (0.33,0.47)
25–44	0.85(0.62,1.17)	0.90 (0.57,1.43)	1.69 (1.06,2.69)	0.79 (0.72,0.86)
45–64	1.00	1.00	1.00	1.00
Education (years)				
<12	2.83 (1.32,6.05)	0.74 (0.23,2.34)	1.64 (0.64,4.20)	2.33 (1.91,2.84)
12	2.11 (0.90,4.94)	0.76 (0.26,2.26)	0.80 (0.33,1.94)	1.91 (1.67,2.19)
13–15	2.01 (0.90,4.48)	0.84 (0.27,2.58)	0.74 (0.31,1.79)	1.56 (1.35,1.79)
16+	1.00	1.00	1.00	1.00
Marital status				
Married	1.22 (0.90,1.65)	1..30 (0.77,2.21)	2.11 (1.15,3.88)	1.10 (0.98,1.23)
Widowed	0.89 (0.41,1.94)	1.67 (0.56,4.92)	4.41 (1.80,10.83)	1.08 (0.84,1.40)
Divorced/separated	1.13 (0.86,1.48)	1.94 (1.17,3.24)	2.06 (1.12,3.79)	1.20 (1.04,1.37)
Never married	1.0	1.0	1.0	1.00
Occupation				
Professional/managerial	1.00	1.00	1.00	1.00
Sales and administrative support	0.90(0.54,1.51)	1.53 (0.66,3.57)	1.74 (0.99,3.07)	0.93 (0.84,1.04)
Labourers	1.43 (0.83,2.48)	1.91 (0.84,4.36)	1.52 (0.78,2.97)	1.33 (1.13,1.57)
Service	1.05 (0.62,1.78)	2.00 (0.83,4.83)	1.74 (0.89,3.41)	1.19 (1.02,1.38)
Workplace smoking policy				
No official smoking policy	1.00	1.00	1.00	1.00
No smoking in work area	0.70 (0.50,0.99)	0.56 (0.34,0.93)	1.03 (0.55,1.93)	0.81 (0.72,0.93)
Smoking permitted in some/all places at work	0.78(0.53,1.15)	0.92 (0.48,1.76)	1.24 (0.61,2.49)	0.98 (0.83,1.15)
Home smoking policy				
Smoking not permitted anywhere	1.00	1.00	1.00	1.00
Smoking permitted as some places or some times	1.44 (1.03,2.03)	2.92 (1.33,6.44)	1.94 (0.97,3.89)	1.76 (1.52,2.04)
Smoking is permitted anywhere at anytime	3.38 (2.34,4.88)	6.21 (3.00,12.86)	4.90 (2.71,8.84)	4.34 (3.81,4.94)

100%–124% above the poverty level, 2.9% were 125%–149% above the poverty level, and 86.9% were 150% or more above the poverty level (data not presented).

The five race/ethnic groups differed with regard to their distribution of demographic characteristics and smoking history (table 1). In general, a higher portion of Hispanic participants were ages 18–24 and had less than 12 years of education. A greater proportion of AA had family incomes below $25 000 than the other race/ethnic groups. AI/AN (19.6%), however, more frequently lived below the poverty level than Hispanic (16.9%), AA (16.8%), Asian/PI (6.8%) and white (4.8%) women ($p<0.001$). Asians/PI had the highest proportion of participants who worked in professional/managerial occupations with Hispanics having the lowest percentage of people who worked in these occupations. The prevalence of current smoking was highest for AI/AN, followed by whites, AA, Hispanics, and Asian/PI ($p<0.001$).

Workplace smoking policy

Overall 11.1% of respondents reported that there was no official smoking policy at their workplace. The prevalence of not having an official workplace smoking policy showed a consistent decreasing pattern by increasing distance from the poverty thresholds for the sample as a whole but differed within race/ethnic groups. Workplaces with no official smoking policy were reported by 19.1% of women at or below the poverty level compared with 16.5% of women who were 100%–124% of the poverty level, 16.2% of women 125%–149% of the poverty level, and 10.0% of women 150% or more above the poverty level ($p<0.001$). The absence of an official workplace smoking policy was reported by 14.8% of Hispanic women compared with 13.9% of AI/AN, 12.8% of AA/PI, 10.7% of white, and 10.5% of AA women ($p<0.001$). In race/ethnic group stratified analyses the prevalence of having an official workplace policy showed a consistent increase with distance from the poverty threshold for AA women only (table 2).

Home smoking policy

Nearly 66% of the women in this analysis reported a home smoking policy that prohibited smoking anywhere. Fewer AI/AN (59.4%) reported this smoking restriction than did white (64.0%), AA (64.4%), Hispanic (78.0%), and AA/PI (79.2%) women ($p<0.001$) (data not presented). In general, the prevalence of a home smoking policy that prohibited smoking anywhere increased with distance from the poverty threshold and was reported by 56.3% of women at or below the poverty threshold, compared with 57.0%, 60.3%, and 67.3% of women 100%–124%, 125%–149%, and 150% or more above the poverty threshold, respectively ($p<0.001$). There was a consistent pattern of increasing prevalence of a complete ban on home smoking with increased distance from the poverty threshold for AA and white women only (table 2).

Prevalence of current smoking

Overall, 20.7% of participants reported current smoking. The prevalence of current smoking was highest for AI/AN women (30.1%) followed by white (22.9%), AA (17.7%), Hispanic (12.5%), and AA/PI (8.3%) women ($p<0.001$). In multivariate analyses stratified by the poverty threshold categories, race/ethnicity, age, education, and home smoking policy were significantly associated with the prevalence of current smoking for all poverty level categories except for women who were 125%–149% above the poverty threshold for which only race/ethnicity, age, workplace, and home smoking policies were significantly associated with current smoking

Table 6 Multivariate logistic regression analysis of current smoking among the employed female civilian US population who reported ever smoking by poverty level, TUS-CPS 1998–2002

Variable	At or below the poverty level (n = 2493)	100%–124% of the poverty level (n = 1096)	125%–149% of the poverty level (n = 996)	150% or more above the poverty level (n = 28176)
Race/ethnicity				
African American	(0.65,1.41)	1.24 (0.71,2.16)	1.17 (0.61,2.27)	1.13 (0.98,1.30)
American Indian/Alaska Native	1.02 (0.41,2.54)	2.84 (0.43,19.61)	4.14 (0.87,19.65)	1.03 (0.63,1.68)
Asian American/Pacific Islander	1.82(0.67,4.96)	2.30 (0.15,35.90)	NA	1.19 (0.85,1.67)
Hispanic	0.85 (0.55,1.32)	1.67 (0.80,3.49)	0.81 (0.40,1.64)	1.18 (1.00,1.41)
Non-Hispanic white	1.00	1.00	1.00	1.00
Age group				
18–24	2.01 (1.32,3.05)	8.25 (3.59,18.95)	3.25 (1.61,6.57)	3.87 (3.25,4.61)
25–44	1.90 (1.37,2.62)	3.47 (2.30,5.24)	3.55 (2.20,5.74)	2.05 (1.91,2.20)
45–64	1.00	1.00	1.00	1.00
Education (years)				
<12	4.45 (2.33,8.53)	2.09 (0.896,5.09)	1.70 (0.61,4.76)	2.72 (2.35,3.16)
12	4.01 (2.22,7.24)	2.32 (1.06,5.08)	1.39 (0.59,3.28)	1.96 (1.79,2.15)
13–15	3.26 (1.80,5.88)	1.68 (0.71,3.95)	1.08 (0.45,2.60)	1.59 (1.44,1.75)
16+	1.00	1.00	1.00	1.00
Marital status				
Married	0.68 (0.46,1.00)	0.95 (0.54,1.68)	0.54 (0.29,1.02)	0.61 (0.55,0.67)
Widowed	0.66 (0.33,1.30	1.55 (0.68,3.51)	1.28 (0.34,4.85)	0.73 (0.59,0.89)
Divorced/separated	0.97 (0.70,1.36)	1.29 (0.72,2.30)	0.74 (0.41,1.37)	1.00 (0.91,1.10)
Never married	1.00	1.00	1.00	1.00
Occupation				
Professional/managerial	1.00	1.00	1.00	1.00
Sales and administrative support	0.80 (0.50,1.28)	1.24 (0.67,2.31)	1.18 (0.68,2.05)	1.02 (0.95,1.09)
Labourers	0.94 (0.53,1.66)	1.51 (0.69,3.30)	1.87 (0.89,3.92)	1.11 (0.98,1.24)
Service	1.09 (0.67,1.77)	1.63 (0.97,2.73)	1.54 (0.80,3.08)	1.18 (1.07,1.31)
Workplace smoking policy				
No official smoking policy	1.00	1.00	1.00	1.00
No smoking in work area	1.23 (0.89,1.68)	1.31 (0.77,2.22)	1.00 (0.58,1.70)	0.81 (0.73,0.90)
Smoking permitted in some/all places at work	1.75 (1.14,2.68)	1.18 (0.63,2.22)	1.43 (0.74,3.22)	0.99 (0.87,1.13)
Home smoking policy				
Smoking not permitted anywhere	1.00	1.00	1.00	1.00
Smoking permitted as some places or some times	4.13 (3.16,5.39)	7.17 (4.55,11.32)	6.02 (3.83,9.44)	4.60 (4.25,4.96)
Smoking is permitted anywhere at anytime	12.13 (8.43,17.45)	16.29 (9.53,27.86)	13.00 (7.33,23.04)	11.77 (10.79,12.83)

(table 3). The prevalence of current smoking was significantly lower for AA and Hispanics and nearly so for AA/PI than white women within each of the poverty threshold categories. The adjusted odds of current smoking was also lower for women with a workplace policy that permitted smoking in the work area than for women for whom there was no official workplace smoking policy among those who were 150% or more above the poverty threshold OR 0.80, 95% CI 0.74, 0.87. The adjusted odds of current smoking were significantly higher for women in all poverty level categories who had home policies that permitted smoking.

In race stratified multivariate logistic regression analyses age group, education, marital status, and home smoking policy were significantly associated with current smoking for AA, AI/PI, and Hispanic women while poverty level, occupation, and workplace policy were not. The size and direction of the odds ratios, however, differed by race/ethnicity (table 4). For example, being in the 18–24 year old age group was significantly associated with lower adjusted odds of current smoking for African American women (OR 0.44, 95% CI 0.34, 0.57) but increased odds of current smoking for AA/PI (OR 2.45, 95% CI 1.14, 5.25) and white women (OR 1.55, 95% CI 1.38, 1.74). Poverty level was significantly associated with current smoking among Hispanic and non-Hispanic white women while workplace smoking policy was significantly associated with current smoking among white and AA/PI women only. The adjusted odds of current smoking was lower (OR 0.79, 95% CI 0.73, 0.85) for white women who reported a workplace policy that permitted smoking in the work area compared with white women who reported no official workplace smoking policy. The adjusted odds of current smoking among white women also decreased with increasing distance from the poverty threshold. Among AA/PI women, the adjusted odds of current smoking was higher for women who had workplace smoking policies that permitted smoking anywhere compared with same race/ethnic group women with workplaces without an official smoking policy (OR 1.79, 95% 1.03, 3.10). Home policies that permitted smoking were associated with increased odds of current smoking compared with policies where smoking was not permitted for all race/ethnic groups.

In multivariate analyses restricted to women who reported ever smoking and stratified by poverty level, younger age and home smoking policies that permitted smoking were significantly associated with increased adjusted odds of current smoking for all poverty level categories (table 6). Compared with not having an official smoking policy, workplace policies that permitted smoking in some areas were significantly associated with an increased odds of current smoking for women at or below the poverty level (OR 1.75, 95% CI 1.14, 2.68) only while policies that prohibited smoking in the work area were significantly associated with a lower odds of current smoking among women 150% or more above the poverty level only (OR. O.81, 95% CI 0.743, 0.90).

Heavy smoking

Slightly more than 38% of participants who reported current smoking were categorised as heavy smokers (that is, 20+ cigarettes per day). In general, in multivariate analyses stratified by poverty level categories the odds of heavy smoking were lower for racial/ethnic minorities, younger age groups, and people employed in workplaces that had policies that did not permit smoking in the work area although specific results for poverty level categories varied (table 5). Home smoking policies that permit smoking anywhere at

Table 7 Multivariate logistic regression analysis of a quit attempt in the past year among employed female civilian US population who reported every day smoking by poverty level, TUS-CPS 1998–2002

Variable	At or below the poverty level (n = 1554)	100%–124% of the poverty level (n = 664)	125%–49% of the poverty level (n = 592)	150% or more above the poverty level (n = 11379)
Race/ethnicity				
African American	1.25 (0.90,1.73)	1.30 (0.72,2.37)	1.44 (0.81,2.53)	1.01 (0.86,1.19)
American Indian/Alaska Native	2.60 (1.17,5.75)	2.37 (0.76,7.39)	0.58 (0.19,1.75)	0.86 (0.52,1.43)
Asian American/Pacific Islander	1.37 (0.45,4.19)	1.25 (0.31,5.02)	1.09 (0.22,5.29)	1.50 (1.04,2.16)
Hispanic	0.56 (0.34,0.94)	0.55 (0.25,1.22)	1.05 (0.45,2.43)	0.89 (0.69,1.15)
Non-Hispanic white	1.00	1.00	1.00	1.00
Age group				
18–24	0.93 (0.61,1.42)	1.55 (0.67,3.57)	1.17 (0.52,2.67)	1.21 (1.01,1.45)
25–44	1.02 (0.74,1.43)	0.76 (0.42,1.40)	0.97 (0.55,1.71)	0.99 (0.90,1.10)
45–64	1.00	1.00	1.00	1.00
Education (years)				
<12	2.18 (0.74,6.41)	1.10 (0.30,4.04)	0.86 (0.26,2.83)	0.77 (0.60,0.99)
12	2.58 (0.93,7.15)	1.87 (0.52,6.75)	1.41 (0.47,4.20)	0.85 (0.72,1.12)
13–15	3.46 (1.19,10.0)	1.45 (0.41,5.09)	1.49 (0.50,4.38)	0.78 (0.78,1.09)
16+	1.00	1.00	1.00	1.00
Marital status				
Married	0.93 (0.67,1.28)	0.85 (0.50,1.47)	1.33 (0.63,2.77)	1.07 (0.93,1.23)
Widowed	1.09 (0.49,2.41)	0.82 (0.24,2.75)	0.66 (0.17,2.52)	1.03 (0.78,1.35)
Divorced/separated	0.99 (0.74,1.32)	1.14 (0.67,1.94)	0.97 (0.48,1.94)	0.98 (0.84,1.15)
Never married	1.00	1.0	1.00	1.0
Occupation				
Professional/managerial	1.00	1.00	1.00	1.00
Sales and administrative support	1.378 (0.85,2.23)	1.78 (0.91,3.47)	0.35 (0.19,0.63)	1.05 (0.95,1.17)
Labourers	0.94 (0.53,1.68)	1.26 (0.57,2.78)	0.54 (0.25,1.17)	0.97 (0.82,1.14)
Service	1.10 (0.65,1.88)	1.08 (0.56,2.11)	0.42 (0.23,0.77)	0.91 (0.78,1.06)
Workplace smoking policy				
No official smoking policy	1.00	1.00	1.00	1.00
No smoking in work area	1.32 (0.93,1.88)	0.97 (0.47,1.30)	1.43 (0.81,2.53)	1.14 (0.99,1.31)
Smoking permitted in some/all places at work	1.31 (0.87,1.96)	0.62 (0.33,1.15)	0.95 (0.46,1.97)	1.13 (0.96,1.34)
Home smoking policy				
Smoking not permitted anywhere	1.00	1.00	1.00	1.00
Smoking permitted as some places or some times	0.77 (0.54,1.09)	0.70 (0.37,1.28)	1.12 (0.56,2.24)	0.95 (0.83,1.08)
Smoking is permitted anywhere at anytime	0.53 (0.38,0.74)	0.43 (0.24,0.77)	0.69 (0.37,1.30)	0.65 (0.58,0.73)

anytime were significantly associated with an increased odds of smoking for each of the four poverty level categories.

Quit attempts

Overall, 44.3% of current smokers reported having attempted to quit smoking in the past year. The prevalence of a quit attempt in the past year was highest for women 150% or more above the poverty (45.4%) followed by women 100%–124% of the poverty level (40.7%) at or below the poverty level (40.5%), and women 125%–149% above the poverty level (37.2%) ($p \leqslant 0.001$). Among the five race/ethnic groups, the prevalence of a quit attempt in the past year was highest for AA/PI women (53.6%) followed by AI/AN (45.2%), AA (44.7%), white (44.4%), and Hispanic (39.0%) women.

In multivariate logistic regression analyses having a home smoking policy that permitted smoking anywhere at anytime was associated with a lower adjusted odds of having at least one quit attempt in the past year among participants who reported current smoking for all poverty level categories except for women who were 125%–149% of the poverty level (table 7). In contrast, workplace smoking policies were not associated with a quit attempt in the past year for any of the poverty level categories. Race/ethnicity was significantly associated with a quit attempt for women at or below the poverty level and women 150% or more above the poverty level only after adjusting for other covariates. Among women at or below the poverty level AI/AN women (OR 2.60, 95% CI 1.17, 5.75) had a higher odds while Hispanic women (OR 0.56, 95% CI 0.34, 0.94) had lower odds of having a quit attempt compared with similar white women. AA/PI women 150% or more above the poverty level also had higher odds of having a quit attempt than similar white women (OR 1.50, 95% CI 1.04, 2.16). Other factors significantly associated with having a quit attempt in the past year in multivariate models were educational achievement level for women at or below the poverty level, occupation for women 125%–149% of the poverty level, and age group for women 150% or more above the poverty level.

What this paper adds

This paper adds to the body of knowledge on the effect of tobacco control policies both in the workplace and in the home on current cigarette smoking among US women from diverse socioeconomic groups.

DISCUSSION

Home smoking policies that completely banned smoking were associated with a lower prevalence of current smoking for all race/ethnic groups while poverty level and workplace policy were significantly associated with current smoking among white groups only. Education level was associated with a higher prevalence of current smoking for African American, American Indian/Alaska Native and Asian/ Pacific Island women while no consistent pattern was seen for white or Hispanic women.

The prevalence of current smoking varied among women in the study and was highest among AI/AN women and lowest among Asian/Pacific Islander women compared with other race/ethnic groups. Overall, the prevalence of not having an official workplace smoking policy exhibited a socioeconomic gradient with the prevalence highest among those with family incomes below the poverty level. People in workplaces

Policy implications

Home smoking policies were more consistently associated with a lower prevalence of current smoking irrespective of poverty status or race/ethnicity than workplace policies.

without policies that restrict smoking in the workplace may be at increased risk of exposure and may have greater exposures because of the large amount of time spent in the workplace.

The prevalence of having a home smoking restriction also exhibited a socioeconomic gradient with policies that banned smoking anywhere in the home highest among women in the highest SES groups and lowest among women at or below the poverty level. When stratified by race/ethnicity, however, consistent patterns by SES in the prevalence of an official workplace or home smoking policy that completely banned smoking were seen for African American and white women only. King *et al*[36] found that a substantial segment of the African-American population has accepted tobacco control policy recommendations and have banned smoking in their homes and cars. This suggests that culturally relevant approaches might be an effective means of increasing implementation of self imposed home and personal space bans. For example, the disproportionate number of minority children who suffer from asthma could contribute to increasing awareness of the importance of minimising children's exposure to ETS.[37]

Workplace smoking policies were not associated with having a quit attempt in the past year for any of the poverty level categories. This is an interesting finding given the assumption that smoking restrictions in the workplace provide an incentive for smokers to quit. Our findings suggest that among employed women home smoking restrictions may have more influence on current smoking than workplace policies. It is worth noting that the presence of a worksite policy does not guarantee adequate implementation, surveillance, or enforcement, which might partially account for the failure to find an association between these policies and current smoking among employed women in this study.

Gender and racial/ethnic variability in SES point to the need for further understanding the complexities of the association of SES and health behaviour, particularly with regard to behavioural risks. Although the association between workplace policies, smoking prevalence, and cigarette consumption has been studied previously little was known about how these policies influence rates of current smoking among employed women from diverse socioeconomic and racial/ethnic backgrounds. An analysis of data from the 1998-1999 TUS-CPS[38] found that workplace restrictions were not consistently associated with a lower prevalence of smoking among participants from different racial/ethnic groups, however, the role of gender and SES were not specifically examined.

STUDY LIMITATIONS

There are multiple ways to measure socioeconomic position that are not necessarily interchangeable and that all have inherent limitations. We use the poverty ratio to categorise women into SES groups. While poverty ratios provide some measure of access to basic resources it is not completely clear how this might specifically influence current smoking and cigarette consumption patterns. It could be hypothesised that some people may attempt to reduce stress associated with not having adequate resources to meet basic needs by smoking. It is also possible that our findings might have differed if we had chosen a different SES measure.

Furthermore, these are cross sectional data, therefore we are unable to identify causal relations. There is also the likelihood that homes that do not have smoking restrictions are homes where no residents smoke. With these data we can only identify and examine the association between people who have workplace or home smoking restrictions and the prevalence of current cigarette smoking and cigarette consumption patterns. There is the potential for misclassification of occupation, however, there is no evidence that suggests that this differs among women by race/ethnicity or by poverty level. Therefore, any influence of occupation misclassification on study outcomes is expected to be minimal.

CONCLUSION

These data show that there are variations in smoking and exposure to ETS among employed women, which also varies by race/ethnicity, and SES as measured by poverty level. These findings underscore the importance of examining tobacco control policies in multiple domains (work and home) as well as by race/ethnicity and socioeconomic position.

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