Is the prevalence of cervical cancer screening lower among obese women?

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Introduction

- Cervical cancer is the leading cause of cancer deaths among women in the developing world[(1)]
- In United States is ranked 15th in cancer deaths among women in 2006[(2)]
- Pap testing is recommended:
  - at least every 3 years,
  - beginning within 3 years of the onset of sexual activity (or age 21, whichever comes first)[(3)]
- Routine screening of women 65 years or older is not recommended unless:
  - had recent abnormal Pap testing or
  - at high risk for cervical cancer[(3)]

(1) National Cervical Cancer Coalition. http://www.nccc-online.org/worldcancer.php. Accessed 7/21/2006
(2) SEER Cancer Statistics Review. http://seer.cancer.gov/csr/1975_2003/results_merged/sect_01_overview.pdf. Accessed 7/21/2006
(3) US Preventive Services Task Force, Screening for Cervical Cancer. http://www.ahrq.gov/clinic/uspstf/uspscerv.htm. Accessed 7/21/2006

Introduction

- 24% of adult women in the U.S. were obese in 2005[4]

- Compared to healthy weight obesity is associated with[5] :
  - greater number of health problems and,
  - higher utilization of health care system

- Obese women may have lower utilization of preventive services[6]

- Probable role of hormonal factors in cervical carcinoma which could be influenced by obesity [7]

(4) Behavioral Risk Factor Surveillance System, Prevalence Data: http://apps.nccd.cdc.gov/brfss/index.asp Accessed on July 26, 2006
(5) León-Muñoz LM, et al Obes Res. 2005 Aug;13(8):1398-404.
(6) Fontaine KR, et al. Arch Fam Med. 1998;7:381-384
(7) Lacey JV Jr, et al. Cancer. 2003;98(4):814-820

Introduction

- There are conflicting results pertaining to the relation between cervical cancer screening and race
- Some studies reported higher screening rates among White women[8]
- Other studies reported higher screening rate among African American women compared to White women[9]

(8) Corbie-Smith G, et al. J Gen Intern Med. 2002 Jun;17(6):458-64.
(9) Wu LY, et al. J Natl Med Assoc. 1998 Jul;90(7):410-6.

Objectives

- To explore whether obese women in Maryland, between the ages of 40 and 64 years, were less likely to undergo Pap testing than non-obese women and whether differences in Pap testing were seen by race

Methods

- The MCS 2004 is:
  - Population-based statewide survey
  - On cancer screening and behavioral risk factors
  - Among Marylander ages 40 and older
  - Conducted in Winter and Spring, 2004
  - Random digit dial, computer-assisted telephone interview (CATI)

Methods

Data analysis

Data was analyzed with SAS 9.1.

Analysis was conducted in the following steps:

1. Weighted Bivariate analysis
2. Test of the moderating effect of race
3. Weighted multivariable logistic regression modeling

Results

- RDD interviews of 5,004 adults
- 1,526 women were included in the analysis
- Women were included in the analysis if:
  - between the ages of 40 and 64,
  - have not had a hysterectomy, and
  - had BMI information

Results

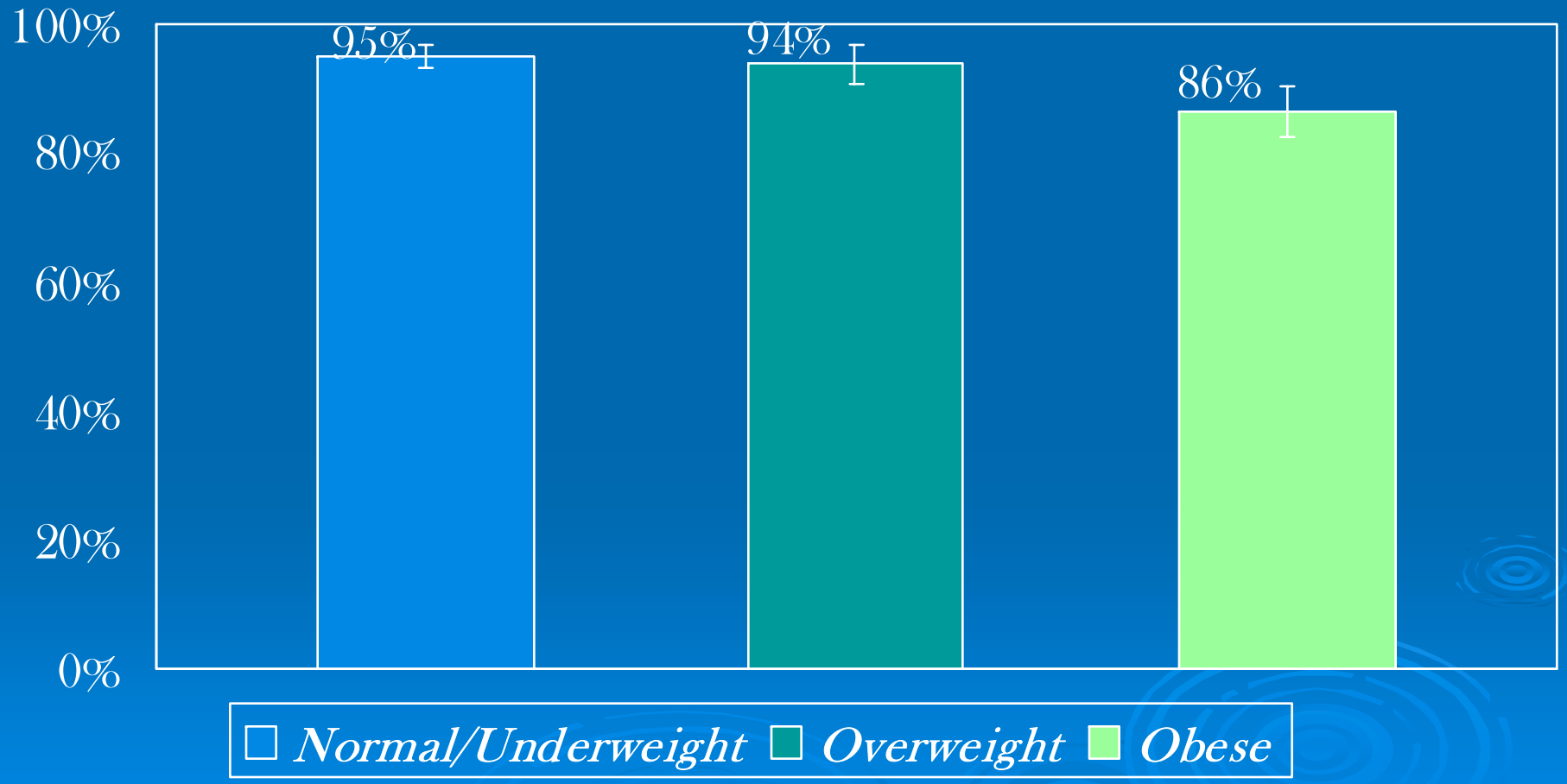
- 92% reported Pap testing within the past three years
- 70% White
- BMI
  - 44% healthy weight,
  - 30% overweight,
  - 26% obese

Results

In bivariate analysis women were more likely to report Pap testing within the past three years if they reported:

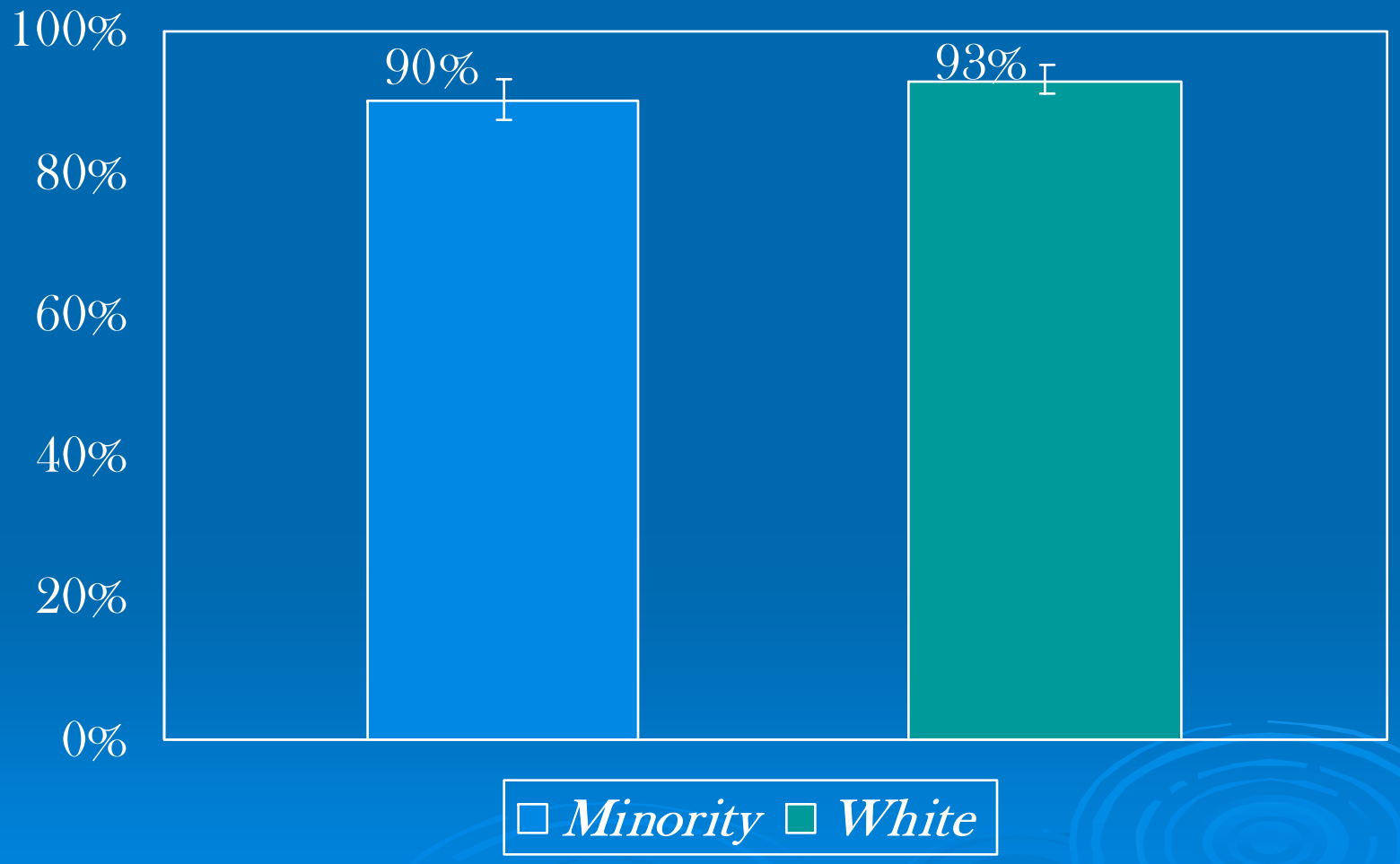
- Being normal/overweight
- Being White
- Being High school graduate or higher
- Having health insurance
- Having excellent/very good health
- Having routine check-up in the past 2 years

Percent Up-to-date With Pap Testing by BMI Category



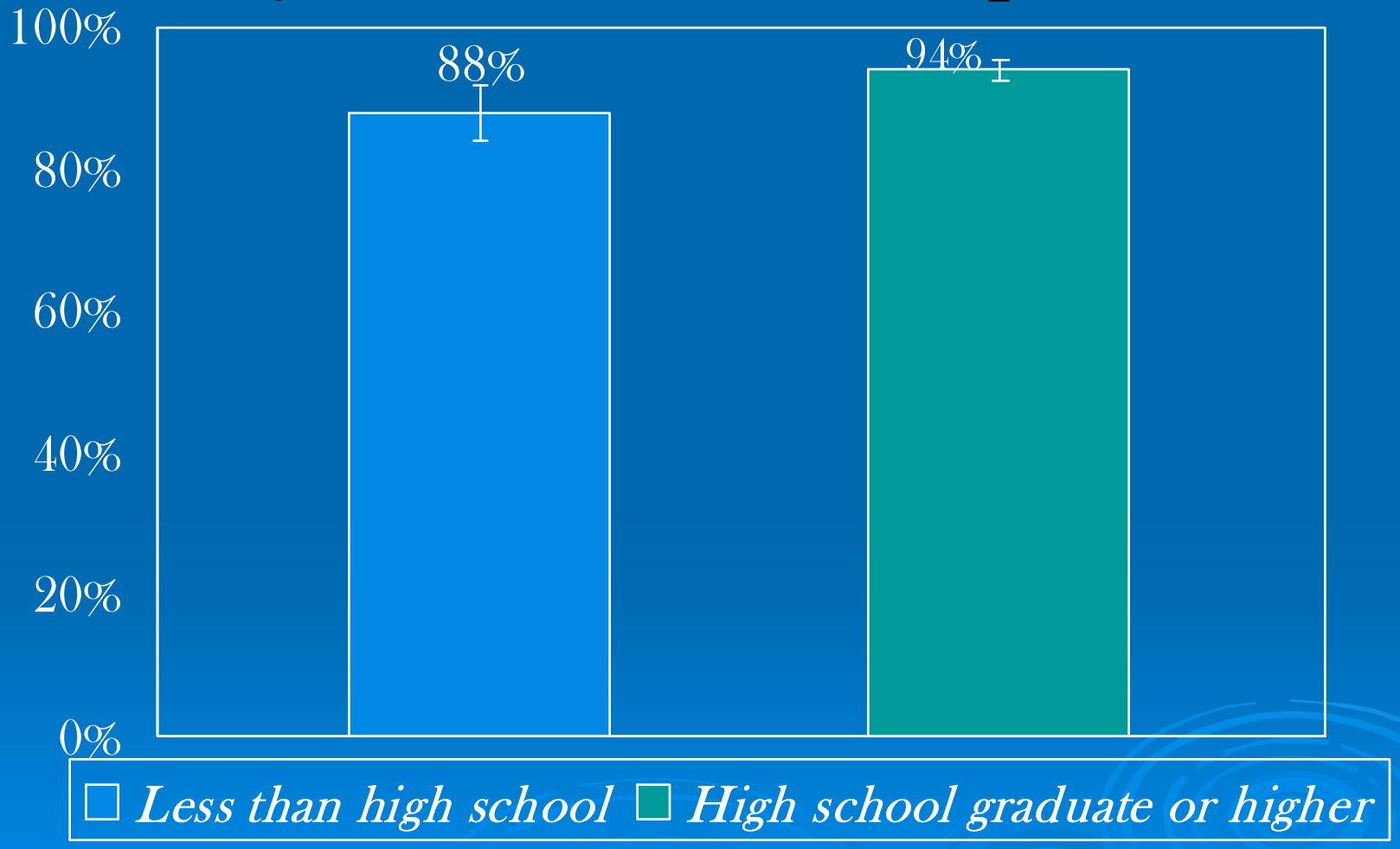
P < 0.0001

Percent Up-to-date With Pap Testing by Race Of Respondents



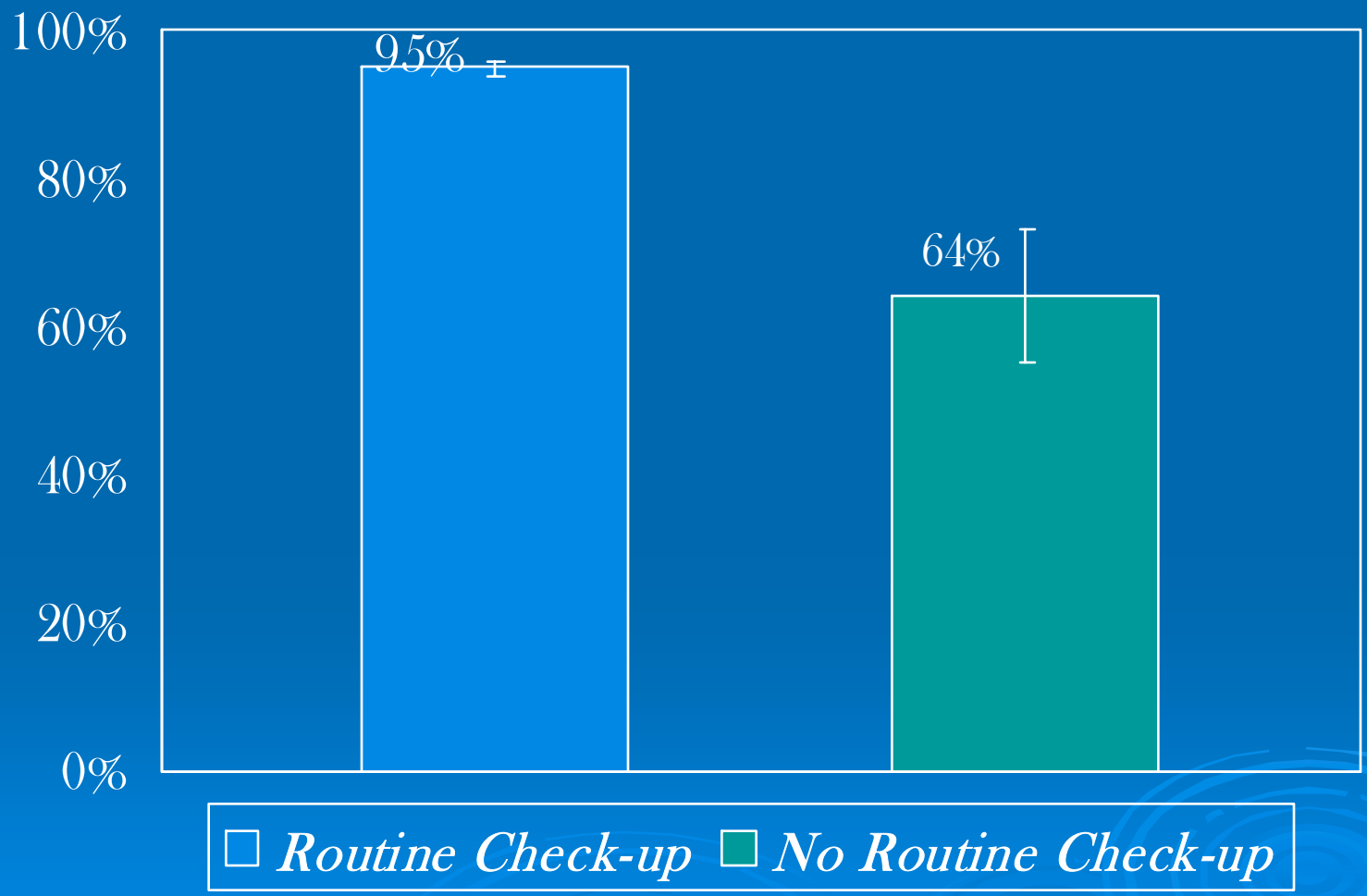
P = 0.08

Percent Up-to-date With Pap Testing by Education Of Respondent



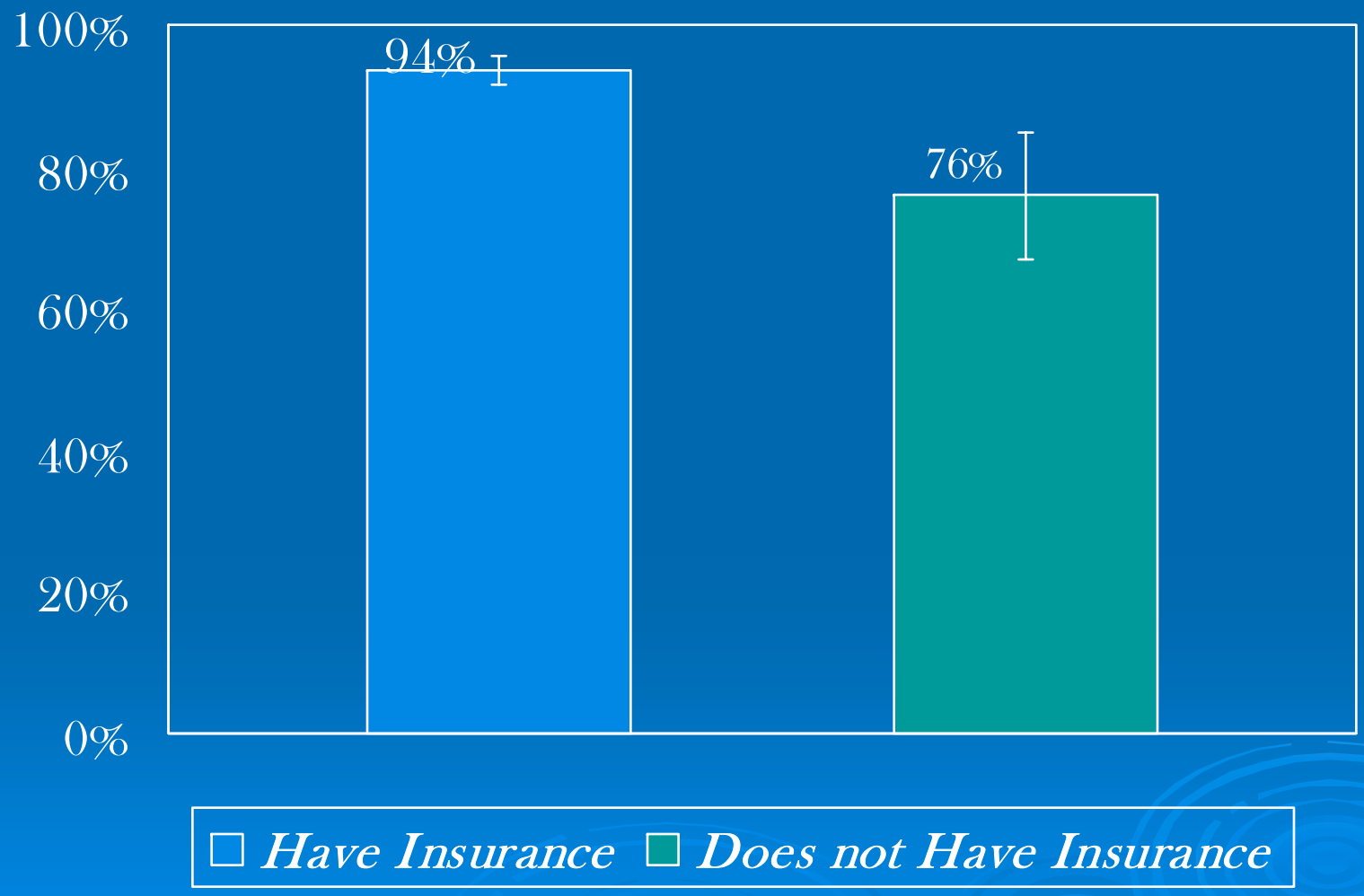
P <0.001

Percent Up-to-date With Pap Testing by Routine Check-up in the Past 2 Years



P < 0.05

Percent Up-to-date With Pap Testing by Health Insurance Status



P < 0.0001

Percent Up-to-date With Pap Testing by Self Reported Health Status

P < 0.0001

Percent Up-To-Date Pap Testing by Race and BMI Category

	Normal BMI	Overweight	Obese	Total
White				93
Minority				90

Percent Up-To-Date Pap Testing by Race and BMI Category

	Normal BMI	Overweight	Obese	Total
White	96	95	84	93
Minority	90	91	90	90
Total	95	94	86	

Interaction between Race and BMI

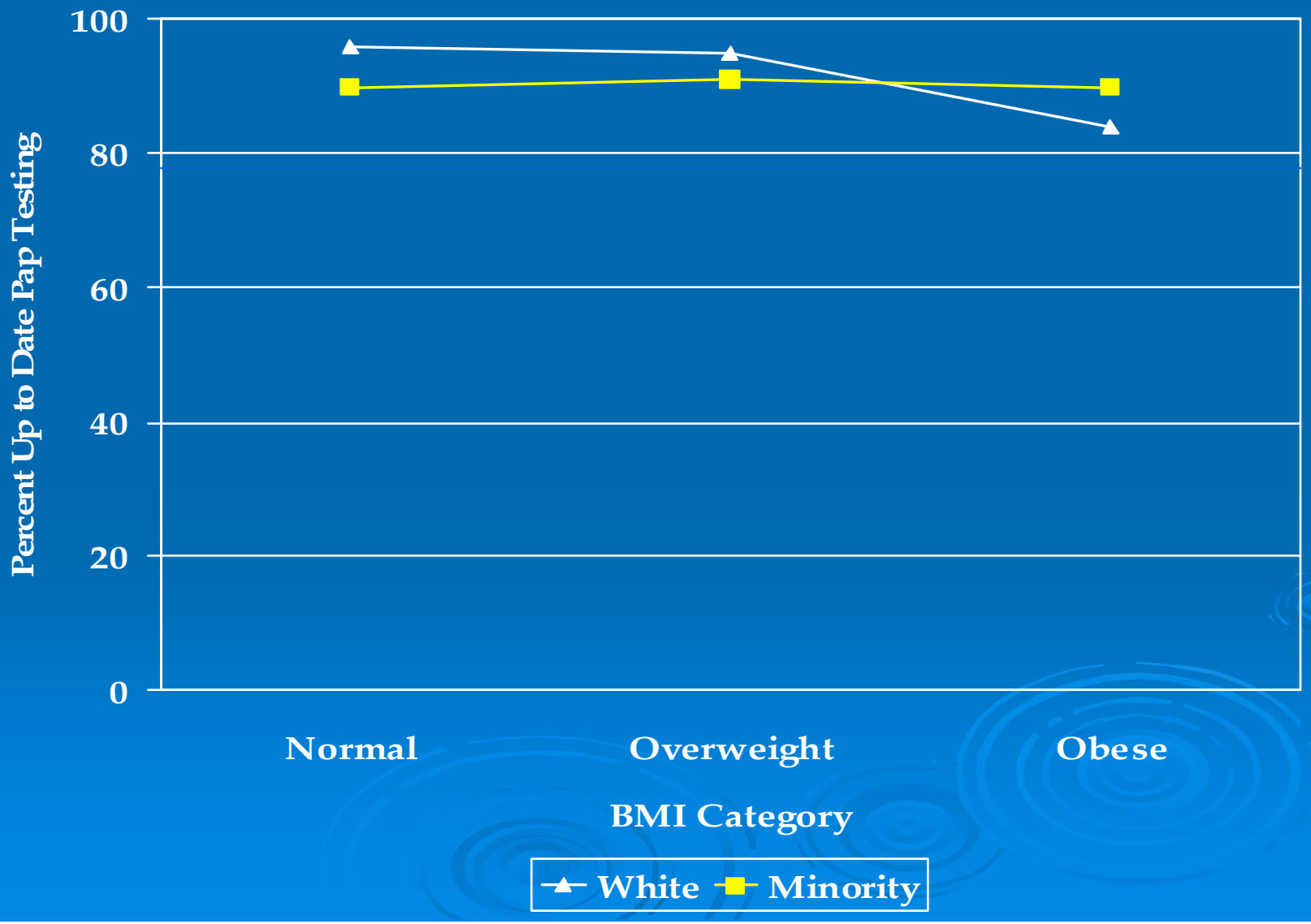


Table . Association between not being up-to-date Pap testing and BMI among women age 40-64 years, adjusted for other factors in a multivariable logistic regression model. Maryland Cancer Survey, 2004. cont.

Variables	OR	95% CI	P-values
Race			
White			
Obese	3.959	3.24-4.68	< 0.001
Non-obese	1.000	Reference	
Minority			
Obese	1.148	0.50-2.63	0.74
Non-obese	1.000	Reference	

Table . Association between not being up-to-date Pap testing and BMI among women age 40-64 years, adjusted for other factors in a multivariable logistic regression model. Maryland Cancer Survey, 2004. , cont.

Variables	OR	95% CI	P-values
BMI			
Obese			
White	1.040	0.20-1.88	0.93
Minority	1.000	Reference	
Non-obese			
White	0.302	0.14-0.63	<0.01
Minority	1.000	Reference	

Table . Association between not being up-to-date Pap testing and BMI among women age 40-64 years, adjusted for other factors in a multivariable logistic regression model. Maryland Cancer Survey, 2004.

Variables	OR	95% CI	P-values
Health status			
Poor/ Fair	1.932	1.14-3.27	0.01
Excellent/Very good/Good	1.000	Reference	
Time since last Physical Exam			
Five years or longer	42.150	19.81-89.63	<0.0001
Two years to less than 5 years	9.200	3.89-21.76	0.26
One year to less than 2 years	4.550	2.34-8.87	0.16
Less than one year	1.000	Reference	
Education Level			
High school or less	1.949	1.5-3.3	0.01
Some college or more	1.000	Reference	

Discussion

- Our study revealed that:
  - Obesity main effect,
    - Obese women were less likely to be up-to date than non-obese women
  - Race main effect,
    - White women were moderately more likely to be up-to date than Minority women

Discussion

- Race and BMI interaction:
  - Among Whites,
    - obese women were less likely to be up to date with screening than non-obese women
  - Among Minority,
    - obese and non-obese women were similar in screening rates
  - Among non-obese,
    - Minority women were less likely to be screened than White women
  - Among obese,
    - White and Minority women were similar in screening practices

Discussion

- Women were more likely to be screened in the last 3 years if they reported
  - excellent/good health status
  - more than high school education and
  - received recent physical exam

Discussion

- Studies have revealed that obese women are screened less than non-obese women[10,11]
- Most studies were conducted among white women

(10) Ferrante JM, et al. Am J Prev Med. 2007 Jun;32(6):525-31.
(11) Wee C, et al. *Ann Intern Med* 2000; 132:697-704.

Discussion

- No difference in screening by BMI status was detected in most studies conducted in minority women[(12)]
- One study showed that obese minority women are less likely to be up-to-date in Pap testing compared to non-obese[(13)]
- Rates of follow-up were lower among minority women after diagnosis of abnormal Pap results [(14)]

(12) Ostbye T, et al. Am J Public Health. 2005 Sep;95(9):1623-30. Epub 2005 Jul 28.
(13) Ferrante JM, et al. J Womens Health (Larchmt). 2006 Jun;15(5):531-41.
(14) Fox P, et al. J Community Health. 1997 Jun;22(3):199-209.

Discussion

- Lack of Pap testing were associated with
  - Limited English proficiency [15]
  - Not receiving a recent physical exam [16]
  - Lack of health insurance [16]

(15) Jacobs EA, et al. Am J Public Health. 2005 Aug;95(8):1410-6.
(16) Coughlin SS, et al. Prev Chronic Dis. 2004 Jan;1(1):A04. Epub 2003 Dec 15.

Limitations and strengths

- Limitations
  - Recall bias of time of screening…telescoping
  - Self report of weight and height
- Strengths
  - Population-based
  - Large sample size
  - Weighted to Maryland population

Conclusion

- In our study, disparities in Pap testing were observed by race and obesity
- The effect of obesity was moderated by the race effect
- Screening rates among Minority women did not vary with their weight status
- Obese White women were less likely to be screened than non-obese White women

Recommendations

- In order to meet the goals of Healthy People 2010 for Pap testing, special programs are needed to reach the excluded subgroups, including:
  - Minority women
  - Obese women

Contributors

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