The relationship between depressive symptoms and cancer risk factors of smoking and physical activity among African-Americans

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Background

Our mental health greatly dictates the way we think, feel, and act. Recent statistics illustrate that African Americans are prone to having higher rates of depressive symptoms compared to other race and ethnicity groups. In a number of studies, depressive symptoms have been linked to poor health outcomes, such as cancer. Overall, studies show that among African-Americans the rates of depression, smoking, and physical inactivity are relatively high compared to other race and ethnicities. African Americans are disproportionately affected by cancer, with attention to having the highest mortality rate for all cancers amalgamated among all ethnic and racial demographics in the United States.

Specific Aims

This study seeks to explore the associations between depressive symptoms with the cancer risk factors of smoking and physical activity among African-Americans.

The primary aims of the proposed study are:

Examine the association between depressive symptoms and smoking.

Examine the association between depressive symptoms and physical activity.

The overarching hypothesis for aforementioned aims is that as depressive symptoms increase, the risk for cancer (smoking and physical inactivity) increases.

Methods

The participants analyzed in this study are from a church-based cohort of African Americans in Houston, TX recruited between 2008-2013 from.

Descriptive statistics (*Table 1*) were used to describe participant characteristics

A multiple logistic regressions was performed to investigate the relationships between predictor (depressive symptoms, treated as continuous), and outcomes (smoking and physical inactivity, treated as dichotomous), controlling for covariates (age, gender, education, household income, current smoking, heavy alcohol consumption, chronic condition, marital status, and employment status).

All analyses were done using SAS 9.4

Measures

The variables were estimated by utilizing assessment instruments for each variable listed below.

Depressive Symptoms: The Center of Epidemiologic Studies Depression Scale (CES-D) assesses depressive symptoms in community non-clinical populations

Smoking: Items from the Behavioral Risk Factor Surveillance System (24) and the Fagerstrom Test of Nicotine Dependence (25) will be used to assess tobacco use

Physical Activity: International Physical Activity Questionnaire. The IPAQ assesses walking for exercise, walking for transportation, moderate and vigorous physical activity, and time spent sitting.

Table 1. Descriptive Characterstics of Participants

Variables	Mean(SD) / n(%)
Covariates	
Age	45.2 (12.9)
Gender	
Male	372 (25.4)
Female	1,095 (74.6)
Education	
<BS	756 (51.6)
BS	432 (29.5)
>=MS	278 (19.0)
Household income	
<40K	359 (25.3)
40-79.9K	559 (39.4)
>=80K	500 (35.3)
Current smoker*	
No	1,322 (91.1)
Yes	129 (8.9)
Heavy alcohol consumption	
No	1,391 (94.9)
Yes	74 (5.1)
Chronic conditions	
No	555 (38.2)
Yes	898 (61.8)
Marital status	
No	827 (56.5)
Yes	638 (43.5)
Employment status	
No	382 (26.1)
Yes	1,083 (73.9)
Predictor	
Depression (score)	5.8 (5.0)
Outcomes	
At-risk insufficiently active	
No	1,004 (72.3)
Yes	385 (27.7)
Current smoking status	
No	1,322 (91.1)
Yes	129 (8.9)
Meat consumption as main dish	
No	228 (15.6)
Yes	1,238 (84.4)

*Current smoker was not included in the model with smoking as outcome

Table 1. Descriptive Characteristics of Participants

Results

Higher score of depressive symptoms was associated with increased odds of smoking (OR=1.049, 95% CI=(1.012-1.087), p-value=0.008). While, higher score of depressive symptoms was associated with increased odds of being inactive (OR=1.028, 95% CI=1.003-1.053, p-value=0.028).

Table 2. Association between depression and current smoking, controlling for covariates

Variables	OR (95%CI)	P-value
Depression	1.049 (1.013 - 1.087)	0.008
Age	1.012 (0.995 - 1.028)	0.166
Gender (Male)	2.991 (1.961 - 4.563)	0.000
Education (Reference: >=MS)		
<BS	3.326 (1.540 - 7.182)	0.002
BS	1.479 (0.636 - 3.442)	0.363
Household income (Reference: >=80K)		
<40K	1.982 (1.108 - 3.544)	0.021
40-79.9K	1.203 (0.711 - 2.034)	0.491
Marrital status (No)	1.134 (0.723 - 1.780)	0.584
Employment status (No)	1.122 (0.723 - 1.741)	0.607
Heavy drink consumption (No)	0.362 (0.185 - 0.709)	0.003
Chronic conditions (No)	1.277 (0.822 - 1.985)	0.277

Table 2. Association between depression and current smoking, controlling for covariates

Table 3. Association between depression and being inactive, controlling for covariates

Variables	OR (95%CI)	P-value
Depression	1.029 (1.004 - 1.055)	0.023
Age	1.000 (0.988 - 1.011)	0.941
Gender (Male)	0.387 (0.275 - 0.545)	0.000
Education (Reference: >=MS)		
<BS	0.869 (0.613 - 1.232)	0.430
BS	1.003 (0.705 - 1.427)	0.986
Household income (Reference: >=80K)		
<40K	1.059 (0.717 - 1.564)	0.774
40-79.9K	1.106 (0.818 - 1.495)	0.515
Marrital status (No)	0.856 (0.647 - 1.131)	0.273
Employment status (No)	0.728 (0.534 - 0.992)	0.045
Current smoker (No)	1.168 (0.708 - 1.927)	0.542
Heavy drink consumption (No)	1.300 (0.698 - 2.421)	0.408
Chronic conditions (No)	0.934 (0.709 - 1.230)	0.627

Table 3. Association between depression and being inactive, controlling for covariates

Conclusion

Depressive symptoms (CES-D score) were positively associated with the known cancer risk factors of smoking and physical activity.

There needs to be more interventions and awareness on mental health, specifically in the African American community. Additionally, there needs to be more research on how depressive symptoms are directly associated with the prevalence of cancer by looking at psychological factors, biological pathways, and the iatrogenic effect of depression.

Theoretical Model

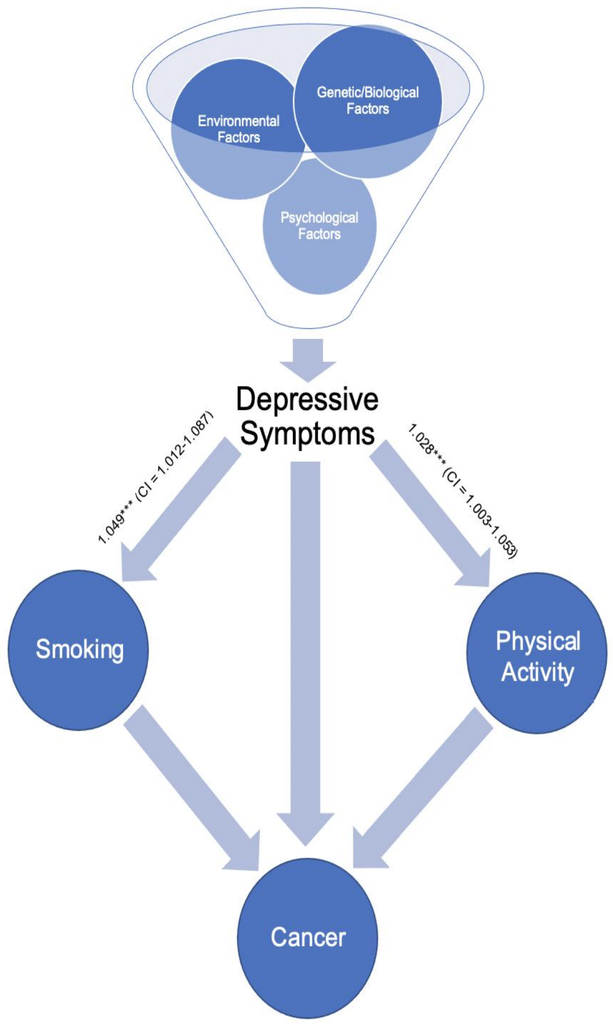

Figure 1. The theoretical modeling of the statistical association between depressive symptoms and cancer risk factors of smoking and physical activity among African Americans. OR (95% CI), *** p < 0.05.

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