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The Effect of Depression on Obesity Versus All-Cause Mortality

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Problem

Obesity is increasing worldwide and has been connected to higher mortality. The longitudinal effect of mental health on physical health has not been explored in a nationally representative, multi-ethnic population. More specifically, the differential effect of depression has not been studied in the specific relationship between obesity and mortality.

Purpose

In this longitudinal, quantitative study we examined the modifying effect of depression on the relationship between obesity and all-cause mortality in a multi-ethnic population, nationally representative population.

Significance

Obesity is a risk factor for many chronic diseases like cardiovascular disease and diabetes. By understanding the impact of mental health, health practitioners can devote more resources into addressing chronic diseases leading from obesity.

Social Change Implications

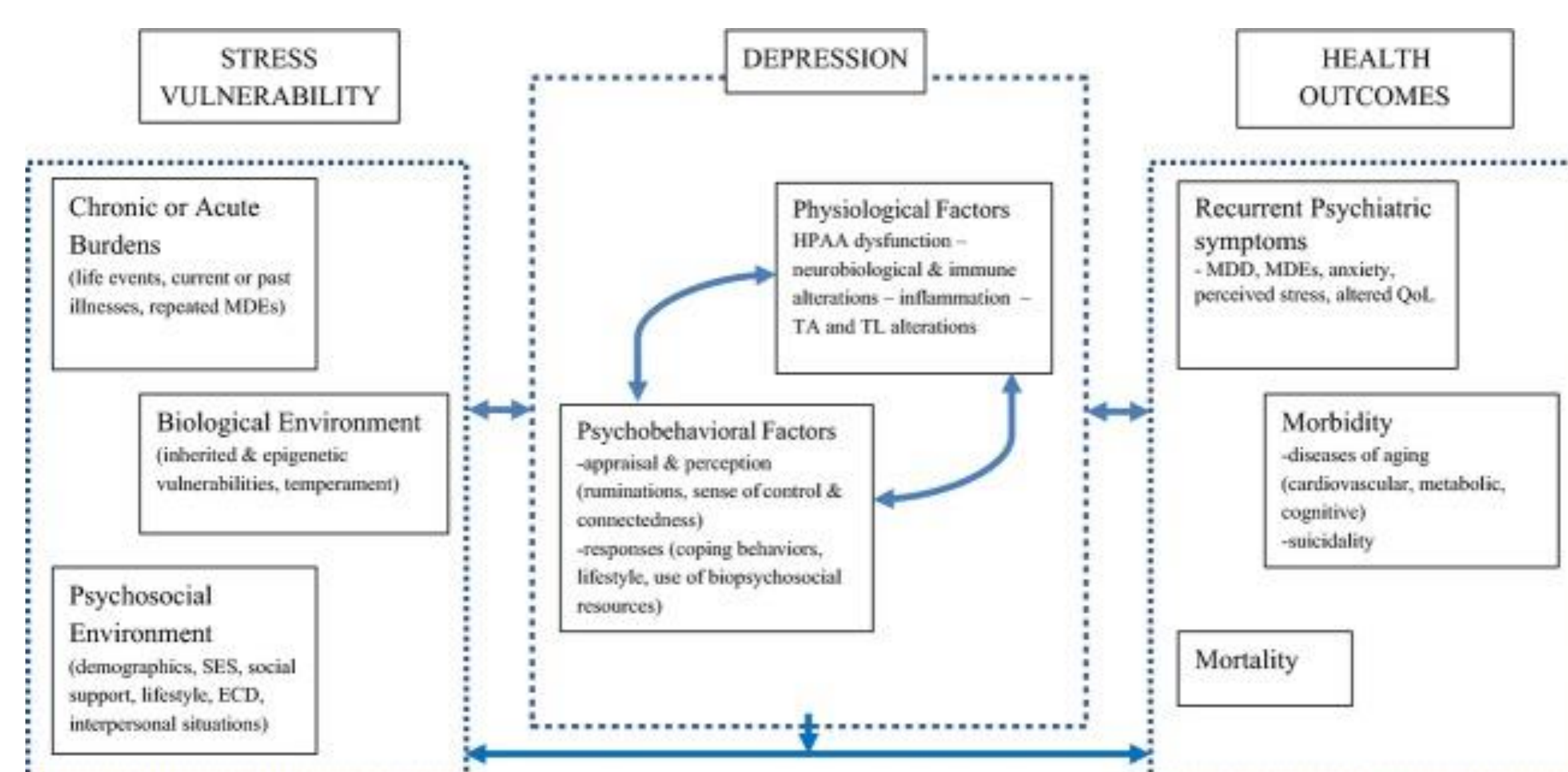
Social change can be elicited by raising awareness regarding the impact of mental health. Since obesity leads to chronic diseases, obesity related chronic disease risk factor outcomes need to be understood through a mental health paradigm. In turn, mental health stigma should be reduced by increasing awareness and universalizing depression screening.

Theory or Framework

The biopsychosocial model, first introduced by George Engel in 1977, can be applied to connect mental health with physical health in this research study. Kinzer and Lyon (2014) updated the physical-mental connection with neuroendocrine and stress vulnerability as a factor. This explains why depression makes an individual more vulnerable to severe outcomes from physical risk factors.

Relevant Scholarship

Researchers found obesity to cause about 1 in 7 of all premature deaths in Europe and 1 in 5 of all premature deaths in North America. From the Global BMI Mortality Collaboration, in different studies from 189 countries, even having a obesity grade 2 (BMI of 35.0 to lower than 40.0), resulted in a Hazard Ratio of 1.94 (95% CI, 1.87-2.01) compared to normal BMI (DiAngelantonio et al., 2016).



Research Question

Does depression modify the effect of obesity on mortality in a multi-ethnic, nationally representative population?

Participants

- All patients (N=14,481) from the nationally representative National Health and Nutrition Examination Survey (NHANES) study, 20 years and older between the years 2005-2010 were included in the analysis. National Vital Statistics was linked to yield follow-up mortality data through December 2011.

Procedures

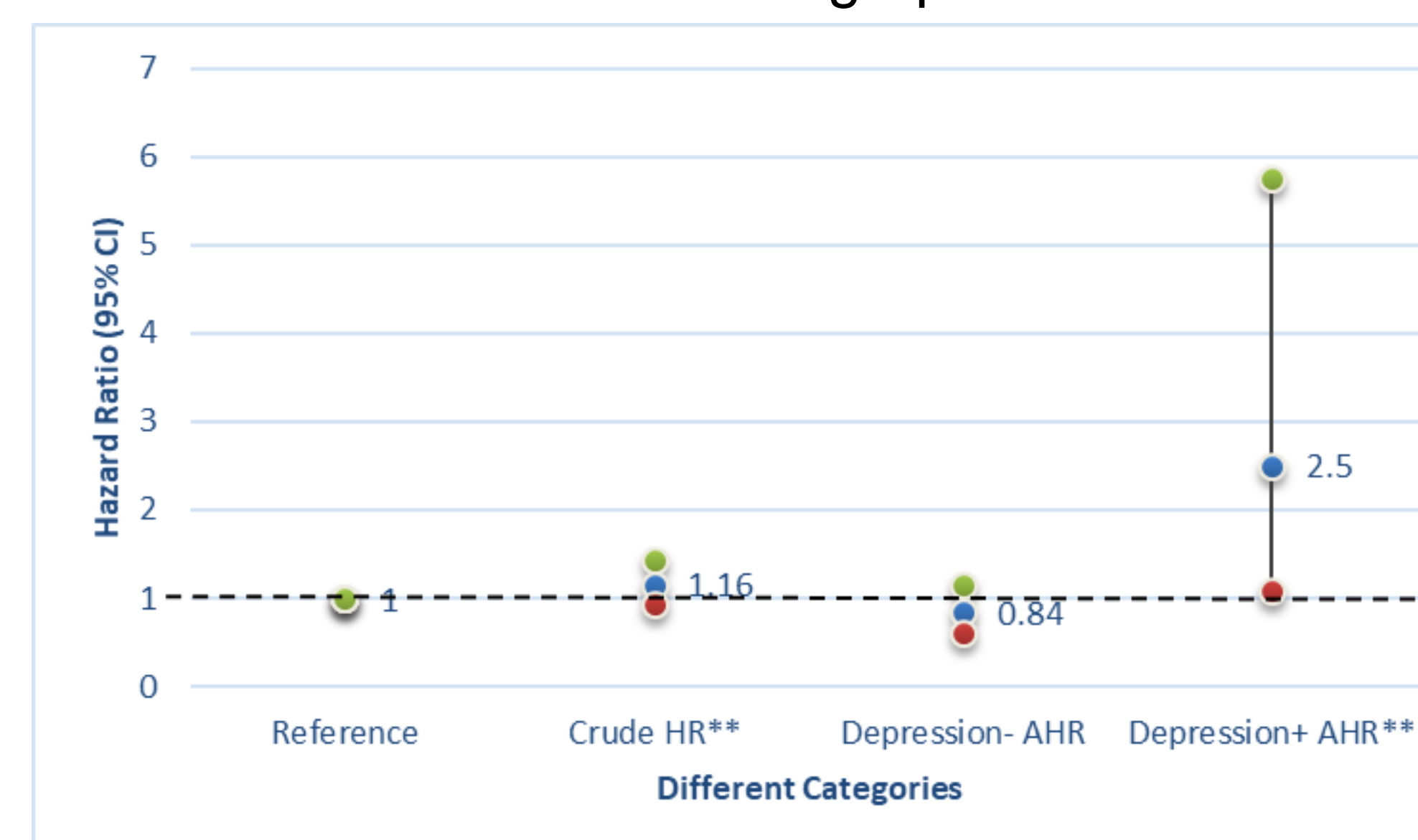
- The NHANES survey is a population-based survey in the United States
- This is an annual survey done on the non-institutionalized population of the United States by the National Center for Health Statistics (NCHS).
- Prevalence of depression among the general population was 2.7% among males and 4.7% among females.
- We assessed for major depression by using the Patient Health Questionnaire-9 measure (score ≥ 10)
- All missing variables were excluded.
- SAS v9.4 was used for analysis
- The mean follow-up was 4.4 years.

Analysis

- Analysis was performed using complex samples Cox Regression to determine the relationship of obesity and all-cause mortality (not stratified by medical condition). Different models were created comparing individuals with and without depression.

Findings

For all-cause mortality, the overall unadjusted hazard ratio (HR) for obesity to no obesity was 1.16 (95% confidence interval [CI], 0.93-1.44, $p > 0.05$). The adjusted HR was elevated, 2.50 (CI 1.08-5.76, $p < 0.05$), among individuals who were obese and had depression but close to 1.0 (0.84 CI 0.61-1.16, $p > 0.05$) among individuals who were obese and had no depression, after the results were controlled for medical risk factors and demographic risk factors.



Interpretation

According to the data, obesity is related to 16% percent higher mortality than those individuals without obesity. Depression also strongly modifies the effect of obesity on all-cause mortality in a nationally representative multi-ethnic population and must be taken into special consideration when treating patients.

Limitations

The PHQ-9 responses are susceptible to recall bias and social desirability bias as these are derived from self-reported data. For instance, review of patient records could serve as validation of self-reported data. Additionally, including longer follow-up time and disease-specific mortality may allow further exploration of the specific impact of obesity. There was missing data which could have been further enhanced by including imputation analysis.

Recommendations

Social policy should be aimed at addressing depression in those individuals with chronic disease and risk factors that may lead to chronic disease. Mental health providers should be integrated into the patient-centered medical home model in order to provide optimal care. More awareness can lead to addressing self-stigma and social stigma associated with mental illness.