Connection between Heart Failure, Diabetes, and Overall Mortality in Individuals with Suicidal Ideation: Findings from a Nationally Representative Study

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Introduction

- At least a quarter of cardiac patients suffer with depression, and adults with depression often develop heart disease.
- According to the World Health Organization, 350 million people suffer from depression worldwide, and 17.3 million die of heart disease each year, making it the number one global cause of death.
- Previous studies have shown diabetes is a known risk factor of cardiovascular disease (CVD).
- A research gap exists on precisely how precise contributory relationship of diabetes and congestive heart failure (CHF) is poorly understood.
- More specifically, the purpose of this 10-year prospective study, was to determine the long-term cardiovascular effects of diabetes.

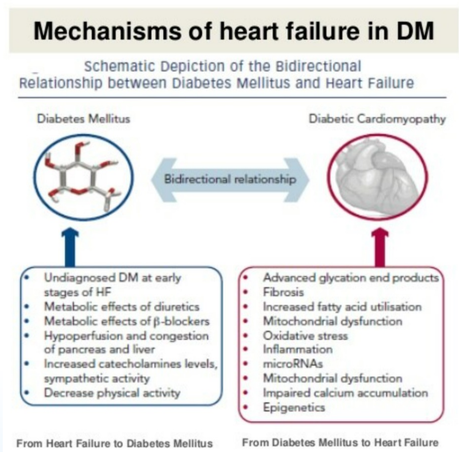

Figure 1: Proposed Pathophysiology relating diabetes, CHF, and development of cardiovascular disease

Figure 2: Five Steps for Suicide Prevention.

- Individuals who attempted suicide had a lower cumulative heart rate variability during the task than those who do not attempt suicide
- Increase in anger was greater in individuals who attempted suicide, and negatively associated with heart rate variability.

Materials & Methods

Methods

- The NHANES survey is a population-based survey in the United States and an annual survey done on the noninstitutionalized population of the United States by the National Center for Health Statistics (NCHS).
- All respondents from this nationally representative study were ≥ 20 years of age and older between the years 1999-2010 and had experienced suicidal ideation were included in the analysis.
- Analysis was performed using Complex Samples Cox Regression analysis to determine the relationship of CHF and all cause mortality.
- In the analysis. National Vital Statistics dataset was linked to yield follow up mortality data through December 2015.
- Diabetes and congestive heart failure (CHF) was determined using self-reported data
- Suicidal ideation was determined to be affirmative if respondents reported any ideation from the PHQ-9 question "Over the past two weeks, how often have you been bothered by thoughts that you would be better off dead or of hurting yourself in some way?"
- A GFR of less than 60 was considered to be CKD as previously validated.
- All missing variables were excluded.
- SAS 9.4 was used for analysis

Results

Mean follow-up is 10.8 years

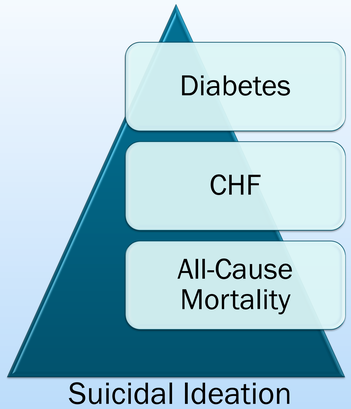

Figure 3: Organization of variables among individuals with suicidal ideation.

Results

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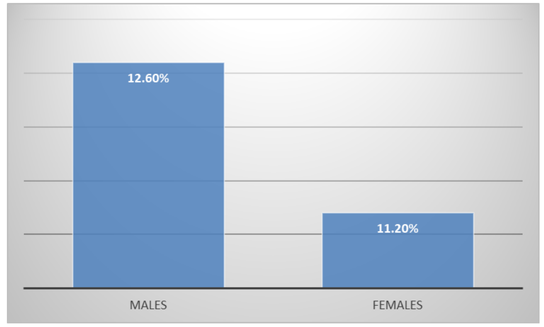

Table 1: Percent Mortality in individuals with CHF stratified by gender.

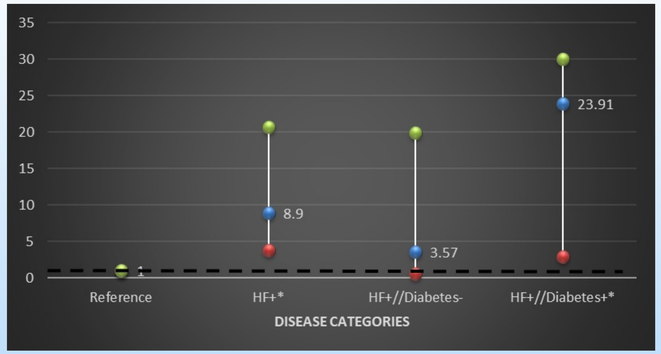

Figure 4: Crude and Adjusted Hazard Ratio of all-cause mortality in those with CHF (adjusted for obesity, Chronic Kidney Disease, education, gender, age, and poverty-income-ratio.)* The upper limit of HR for HF/Diabetes was truncated.

Conclusion

- According to our findings, adults with suicidal ideation and a combination of positive diabetes and CHF status experience 24 times higher mortality rates than those adults with CHF alone

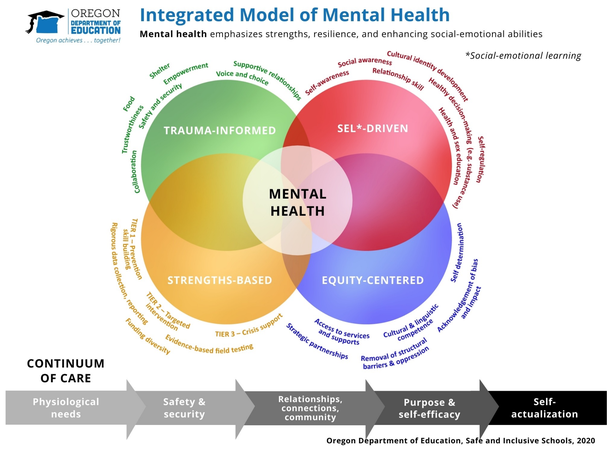

Figure 5: Application of Integrated model of mental health

- Promoting self-care, resiliency, and developing psychological coping skills will allow for improved management of disease.
- Upstream social disparities of diabetes can partially explain the outcome of CVD mortality

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