Associations between Emotional Distress and Coronary Heart Disease: Analysis of National Health Interview Survey 2004-2013

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Disclosure

- The speaker has no relevant financial interests to disclose.

Background

▶ In the past two decades, exploration of the psychological and emotional contribution toward the progression and development of coronary heart disease (CHD) and cardiovascular health related outcomes has increased tremendously (Everson-Rose, & Lewis, 2005; Albus, Ladwig, & Hermann-Lingen, 2014; Ladwig, et al., 2014; Ferkeitch & Binkley, 2005).

▶ There is an immense vulnerability associated with the mind-body experience that impacts cardiovascular health, which cannot be appreciated until overt disease manifests (Rozanski, Blumenthal, & Kaplan, 1999; Pedersen, Kupper, & van Domburg, 2011).

Background

- Studies investigating psychological factors have shown that negative emotions independently influence:
    - Coronary heart disease (CHD) outcomes
    - Decreased quality of life
    - Poor prognosis
    - Decreased medication adherence
    - Higher healthcare utilization & costs
- Medical comorbidities, such as diabetes, obesity, hypertension and inadequate sleep are significant correlates of CHD.
- Yet, little research has been conducted to distinguish what racial and ethnic differences exists.

Background

- Kessler 6 (K6) quantifies non-specific distress assessing how frequently an individual experienced feelings of being sad, nervous, restless, hopeless, worthless and burdened within 30 days.

- In September 2008, the American Heart Association released the Depression and Coronary Heart Disease Recommendations for Screening, Referral, and Treatment urging cardiologists to do more comprehensive clinical evaluations

Purpose

▶ The *purpose* of our study was to investigate the racial/ethnic differences between emotional distress and coronary heart disease, while assessing the relative contribution of other known risk factors using the National Health Interview Survey (NHIS) 2004-2013.

Methods

▶ In a cross-sectional study using a nationally representative sample, we examined the independent associations between emotional distress and CHD among 24, 995 adults (age range 18-85 years) from the National Health Interview Survey (2004-2013).

▶ Relationships were examined using a multivariate adjusted logistic regression model controlling for sociodemographic variables, self-reported physician diagnosed medical history, sleep duration, and health behaviors.

Sample Characteristics

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Results

Table 2. Multivariate-adjusted logistic regression analysis indicating ORs for emotional distress associated with CHD among Whites in the NHIS 2004-2013 dataset (n=   )

Variables	Emotional Distress (K6 scale <13 or ≥ 13)			
		95% C.I. for EXP (*B*)		P-value
	Odds Ratio	*Lower*	*Upper*	
Age	1.063	1.061	1.65	.000
Sex (reference: male)	.432	.413	.453	.000
Marital Status	.995	.993	.996	.000
Income (reference: < $35, 000)	.916	.873	.961	.000
BMI (reference: obese)	.970	.949	.991	.231
Diabetes (reference: none)	1.607	1.548	1.668	.000
Hypertension	2.051	1.972	2.133	.000
Stroke (reference: none)	1.547	1.473	1.624	.000
Hours of Sleep (reference: 7-8 hr)	.996	.993	.998	.001
Alcohol (reference: never)	.990	.987	.992	.000
Smoking (reference: never)	1.321	1.277	1.367	.000
Vigorous Activity	.854	.822	.887	.000
Moderate Activity	.941	.915	.967	.000
Emotional Distress	2.221	2.078	2.374	.000
Constant	.001			.000

Abbreviations: BMI, body mass index; K6, Kessler 6 Mental Health Scale; NHIS, National Health Interview Survey.

Notes: Emotional Distress ≥ 13 on the K6 scale; hours of sleep < 7 or > 8 hours of sleep per day; Smoking status: 100+ cigarettes in lifetime; BMI: ≥ 30 kg/m^2; Self-report or healthcare provider diagnosed the following: hypertension, coronary heart disease, cancer, heart problems, type 2 diabetes, and stroke.

Table 3. Multivariate-adjusted logistic regression analysis indicating ORs for emotional distress associated with CHD among Blacks in the NHIS 2004-2013 dataset (n=   )

Variables	Emotional Distress (K6 scale <13 or ≥ 13)			
		95% C.I. for EXP (*B*)		P-value
	Odds Ratio	Lower	Upper	
Age	1.045	1.041	1.049	.000
Sex (reference: male)	.725	.653	.805 .000	.000
Marital Status	.997	.993	1.001	.134
Income (reference: < $35, 000)	.740	.656	.836	.000
BMI (reference: obese)	1.00	1.00	1.00	.012
Diabetes (reference: none)	1.609	1.486	1.741	.000
Hypertension	2.706	2.383	3.073	.000
Stroke (reference: none)	2.330	2.049	2.650	.000
Hours of Sleep	.997	.993	1.001	.155
Alcohol (reference: never)	.996	.991	1.000	.037
Smoking (reference: never)	1.205	1.127	1.288	.000
Vigorous Activity	.863	.778	.956	.005
Moderate Activity	.770	.707	.839	.000
Emotional Distress	2.286	1.992	2.622	.000
Constant	.001			.000

Abbreviations: BMI, body mass index; K6, Kessler 6 Mental Health Scale; NHIS, National Health Interview Survey.
Notes: Emotional Distress ≥ 13 on the K6 scale; hours of sleep < 7 or > 8 hours of sleep per day; Smoking status: 100+ cigarettes in lifetime; BMI: ≥ 30 kg/m²; Self-report or healthcare provider diagnosed the following: hypertension, coronary heart disease, cancer, heart problems, type 2 diabetes, and stroke.

Discussion

- **Emotional distress remained a significant predictor of CHD.**

- **Individuals with emotional distress showed a two-fold increase of experiencing CHD**

- **Blacks (29%) have a slightly higher risk than Whites (22%)**

Discussion

▶ Independent of health behaviors, socioeconomic/marital status, and traditional risk factors, emotional distress was associated with CHD among White populations.

▶ However, hypertension ([OR]=2.71, 95% [CI]=2.38, 3.07, *P* <.000) and stroke ([OR]=2.33, 95% [CI]=2.05, 2.65, *P* <.000) remain important contributors of CHD among Blacks above emotional distress ([OR]=2.29, 95% [CI]=1.99, 2.62, *P* <.000).

Discussion

▶ **Strengths- sample size, representative, investigates racial differences of emotional distress and CHD using a well-established instrument**

▶ **Limitations-cross-sectional (no causal inference), self-report measures, reporting bias**

Conclusion

▶ **The assessment of emotional distress is important to cardiovascular health.**

▶ **Critically important to continue aggressive hypertensive management and stroke risk reduction among Black populations.**

Conclusion

▶ **Increase utility of the Patient Health Questionnaire (PHQ-2) in practice settings. If the answer is "yes" to either or both questions, it is recommended that all 9 PHQ items (PHQ-9).**

▶ **Refer to mental health services when appropriate with known CHD.**

▶ **Treatment is key**

▶ **Consider Cognitive Behavioral Therapy when indicated**

Future Studies

- The moderating or mediating effects of coping, social support, and family history of depression

- Relationship between duration and severity of emotional distress and CHD

- The associations between healthcare provider characteristics affecting perceptions of emotional distress and likelihood to screen/treat

- Investigate longitudinal effects

Thank you!

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