



Social Determinants of Health and Cancer Risk and Outcomes

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Domains



Medical University of South Carolina Transdisciplinary Collaborative Center in Precision Medicine and Minority Men's Health



- Multi-regional consortium
- Translational research on biological, social, psychological, and clinical factors
- Dissemination and implementation
- Data integration

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**Low Country AHEC
National Black Leadership Initiative on Cancer
Hope Institute, LLC
Southeastern Health Equity Council**



Rationale for Focusing on Minority Men's Health

Article

Ever and Annual Use of Prostate Cancer Screening in African American Men

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Sociocultural determinants of men's reactions to prostate cancer diagnosis

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Health Outcomes Research

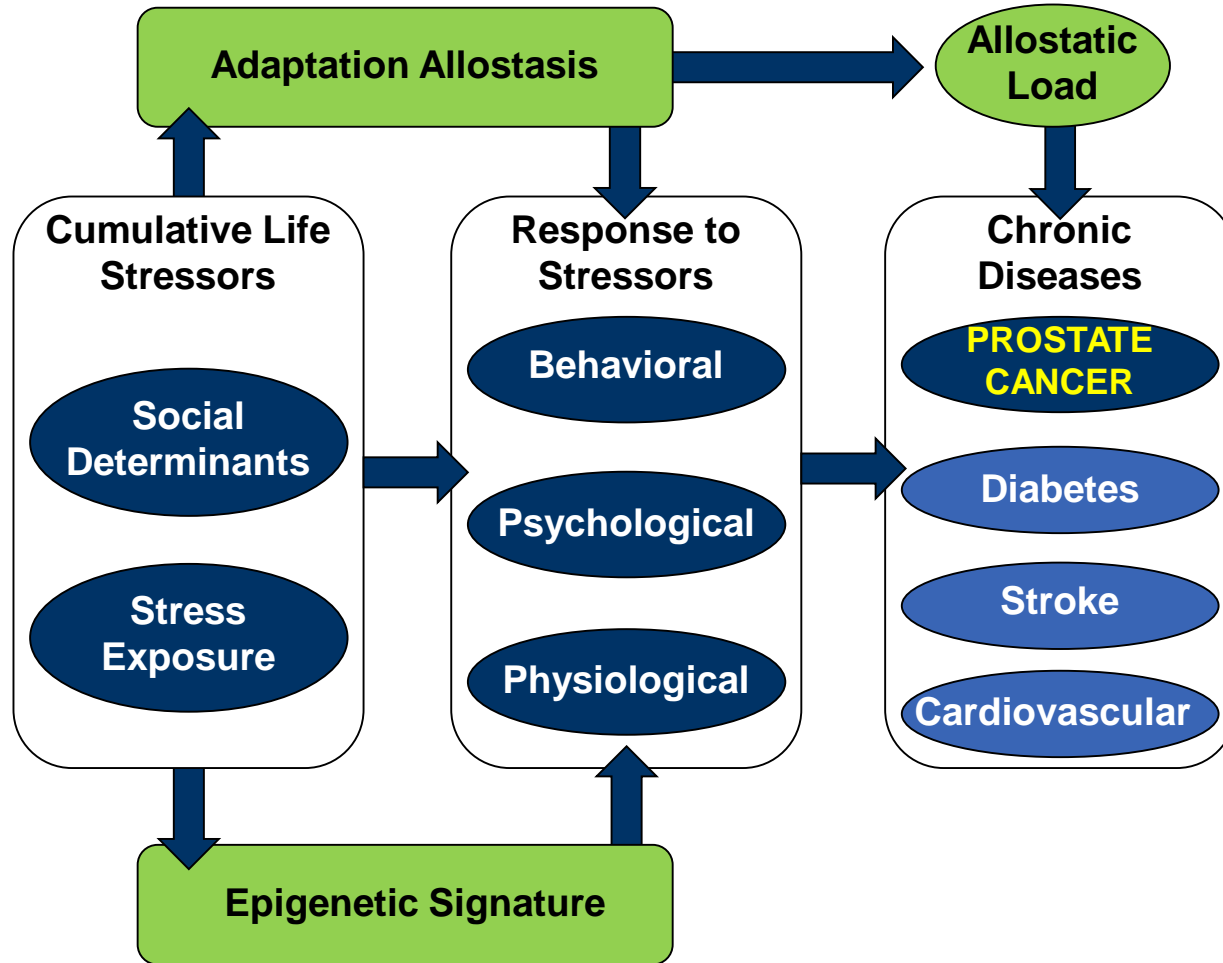
Racial Differences in Quality of Life Following Prostate Cancer Diagnosis

Chanita H. Halbert, James Coyne, Benita Weathers, Brandon Mahler, Ernestine Delmoor, David Vaughn, S. Bruce Malkowicz, David Lee, and Andrea Troxel



Triumphant Living Collaborative
West Philadelphia Consortium to Address Disparities

MUSC Transdisciplinary Collaborative Center in Precision Medicine and Minority Men's Health Medicine



- Minority men experience unique acute and chronic stressors
- ***Social and psychological*** stressors impact biological processes involved in the initiation and progression of disease
- Allostatic load is a marker of how much social and psychological stressors impact biological functioning
- Racial disparities in allostatic load exist
- Need to understand the effects of allostatic load on disease processes and outcomes

MUSC TCC Precision Medicine Projects

How does psychosocial stress influence cellular stress?

Project 1: Sociobiological Responses to Stress in Prostate Cancer Survivors

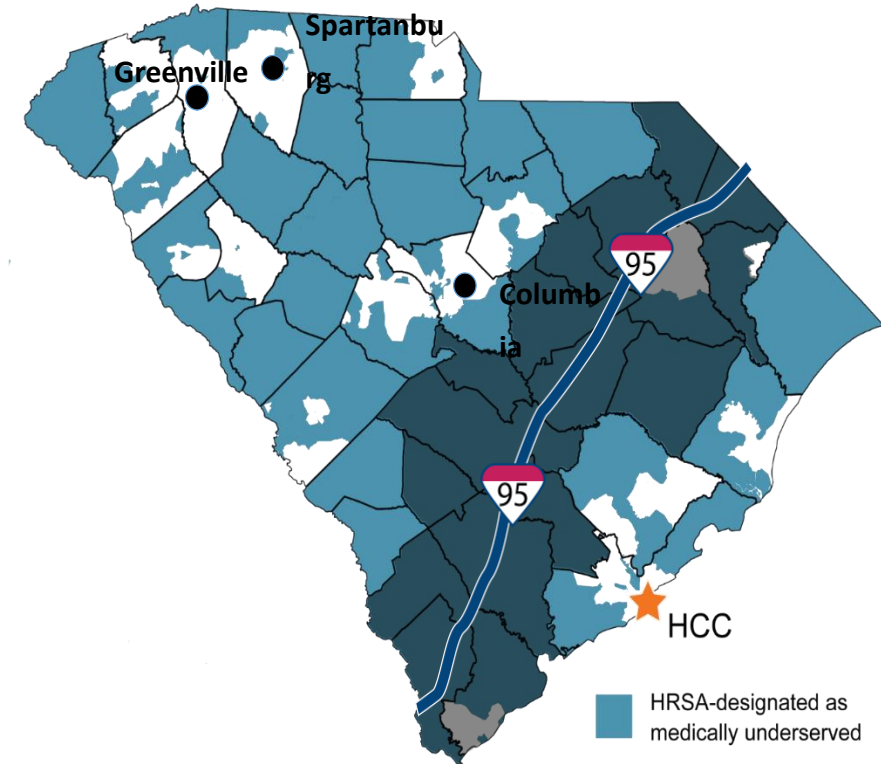
(M. Lilly, C. Hughes-Halbert, Co-Leads). Examine the effects of stress reactions and allostatic load on immune responses to a prostate cancer vaccine among survivors at high risk for recurrence

Project 2: Defining an Integrated Allostatic Load Index with Immune and Tumor Microenvironment Factors

(R. Drake, Co-Leads). Identify novel biomarkers for prostate cancer based on metabolites, glycans, and immune modulators in prostate tissue samples. Characterize the distribution of these biomarkers based on allostatic load, racial background, social factors, and psychological characteristics

Project 3: Integrating Genomic and Sociobiological Data to Inform the Development of Prostate Cancer Treatment

(S. Savage Lead). Evaluate the effects of Vitamin D supplementation on molecular changes in the prostate cancer. Examine the effects of Vitamin D on HPA axis functioning and allostatic load biomarkers to determine individual response to supplementation



South Carolina is a proving ground for precision medicine because it reflects social, economic, and geographic challenges in the US

Social Determinants Survey

Socioeconomic Stressors

Income level
Employment status
Education level
Marital status

Financial toxicity
Financial strain

Disease-related Stressors

Stage
Grade
PSA
Treatment type

Co-morbidities
Primary Appraisal
Secondary Appraisal

Perceived Stress Scale

Difficulty dealing with unexpected events
Feeling a lack of control or that things are outside of one's control
Feeling stress or stressed
Managing or handling personal problems

Difficulty coping with responsibilities
Difficulty controlling irritability or irritations
Difficulty staying on top of things
Responsibilities piling up

Social Isolation

Lack companionship
Feel left out
Feel isolated from others

Social Determinants among Men at Increased Risk for Adverse Prostate Cancer Outcomes

Variable	Level	MUSC (n=80) n (%)	VAMC (n=48) n (%)
Race	Minority	13 (16%)	27 (56%)
	Non-minority	67 (84%)	21 (44%)
Education level	≥ Some college	58 (75%)	25 (54%)
	≤ High school	19 (25%)	21 (45%)
Marital status	Married	71 (89%)	23 (55%)
	Not married	9 (11%)	19 (45%)
Employment status	Employed	27 (38%)	13 (30%)
	Not employed	43 (62%)	31 (70%)
Income	LT \$35,000	55 (70%)	15 (43%)
	GT \$35,000	24 (30%)	20 (57%)
Age	Mean (SD)	65.8 (5.8)	65 (6.8)

Descriptive Information on Financial Toxicity and Strain

Variable		MUSC	VAMC	p-value
Financial toxicity	Mean	35.7	24.4	<.0001
	Standard deviation	7.1	10.0	
	Range	14.5-44	2-44	
Financial strain	Some money left over	51%	48%	.0203
	Just enough money left over	28%	15%	
	Not enough money left over	18%	37%	
	Don't know/refused	4%	0%	

Sample size for financial toxicity at MUSC=77; Sample for VAMC=48
 Sample size for financial strain at MUSC=77; Sample size for VAMC=46

MUSC Prostate Cancer Survivors (n=324)

Clinical Characteristics	Co-Morbidities
31% Minority	45% Chronic condition
PSA Mean (SD) = 9.2 (11)	Mean (SD) chronic conditions = 1.36 (.058)
77% T2 23% T3	<ul style="list-style-type: none">• 40% High blood pressure• 23% High cholesterol• 11% Diabetes• 9% Heart problems• 1% stroke
72% 3+4 Gleason score	SBP Mean (SD) = 142.1 (17.8) DBP Mean (SD) = 82.1 (9.2)

Allostatic Load Characteristics among Veterans

Variable	Mean (SD)
Body Mass Index	29.6 (6.0)
Systolic Blood Pressure	137.3 (18.3)
Diastolic Blood Pressure	81.3 (9.3)
HBA1C	5.83 (1.1)
Cholesterol	184 (40.6)

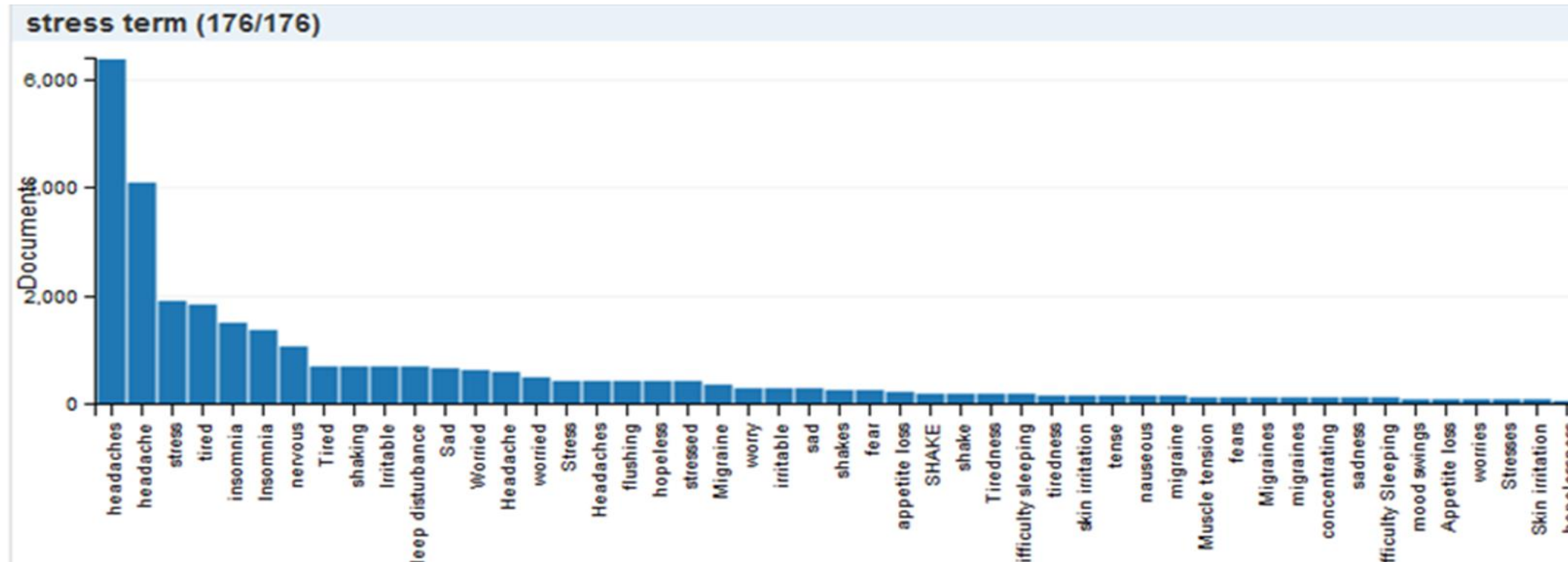
86% have at least one chronic condition

Correlation between Allostatic Load and Clinical and Psychosocial Stressors

	African American	White
PSA	-0.17 (0.16)	0.29 (0.04)
Gleason score	-0.008 (0.98)	0.08 (0.59)
Financial toxicity	0.06 (0.81)	-0.45 (0.04)
Perceived stress	-0.32 (0.11)	0.28 (0.20)
Social isolation	0.06 (0.77)	0.23 (0.31)

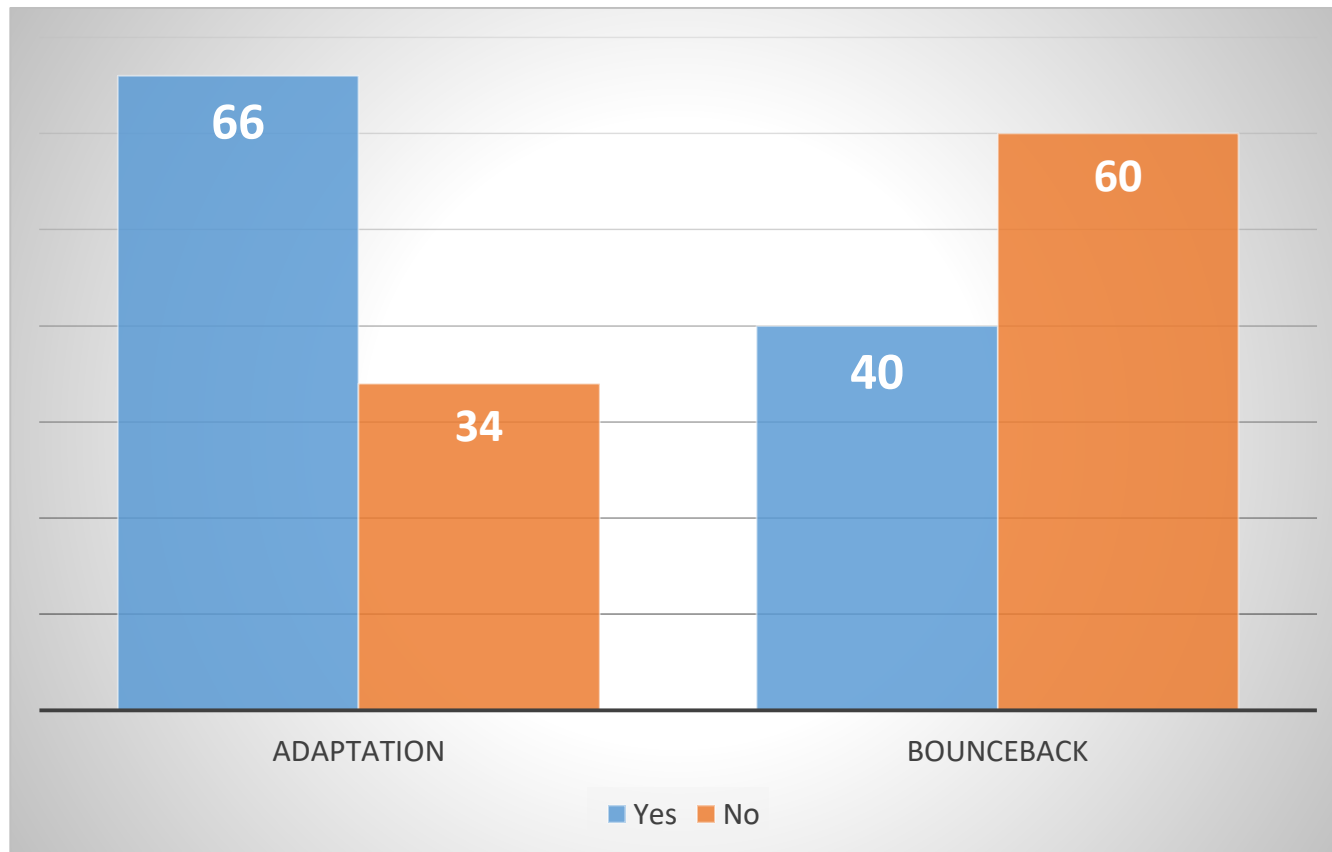
Identifying Stress in the Electronic Health Record

- 2,357 (75% of 3,138) patients have at least one stress mention identified from the notes
- 176 terms representing stress



Resilience

Resiliency: The ability to recover from challenges, stressors, and difficulties



- Allostatic load is greater among men who report resiliency
 - Bounceback: 3.31 vs. 2.14
 - Adapation: 2.90 vs. 2.06

Future Directions and Opportunities

- Greater inclusion of social determinants in electronic health records
- Standardize measurement and data collection strategies
- Develop strategies to address social risk factors
- Examine health care quality and outcomes based on documentation of social determinants

MUSC Transdisciplinary Collaborative Center in Precision Medicine and Minority Men's Health Medicine

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