

Trauma Exposure and Endothelial Function in Midlife Women

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Cardiovascular Disease (CVD) in Women

- Cardiovascular disease (CVD) leading cause of death in women
 - Midlife often a time of worsening CV health
 - CVD develops over lifetime: Lifetime exposures
- Focus on biomedical risk factors
- Psychosocial factors well-established to relate to future CVD risk

Psychosocial Factors and Women's Cardiovascular Health

- **Focus on mood, depression, anxiety** (Thurston et al., 2006; Thurston & Kubzansky, 2009; Thurston et al., 2013; Lambiase & Thurston, 2014; Thurston et al., 2014)
- **What about external stressors / traumatic experiences?**
 - Trauma exposure common, certain types common among women (e.g., sexual harassment)
- **Limited examination of trauma exposure in relation to women's CVD risk**
- **Consideration of risk / protective factors**

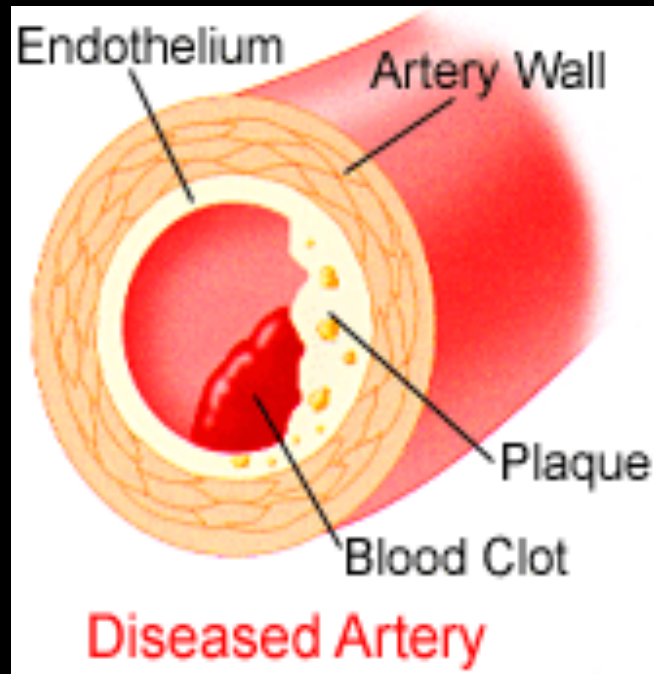
Trauma
Exposure



Endothelial
Function

CVD Risk Factors,
Depression /
Anxiety,
Sleep

Vascular Endothelium



- Vascular endothelium critical to vascular health
- Dysfunction: Early manifestation of CVD
- Brachial artery flow mediated dilation (FMD)
 - Low: Poorer function
 - Prospectively associated with CVD

MsHeart

(R01HL105647, PI: Thurston)



Screening,
Questionnaires (Trauma)
Physical measures

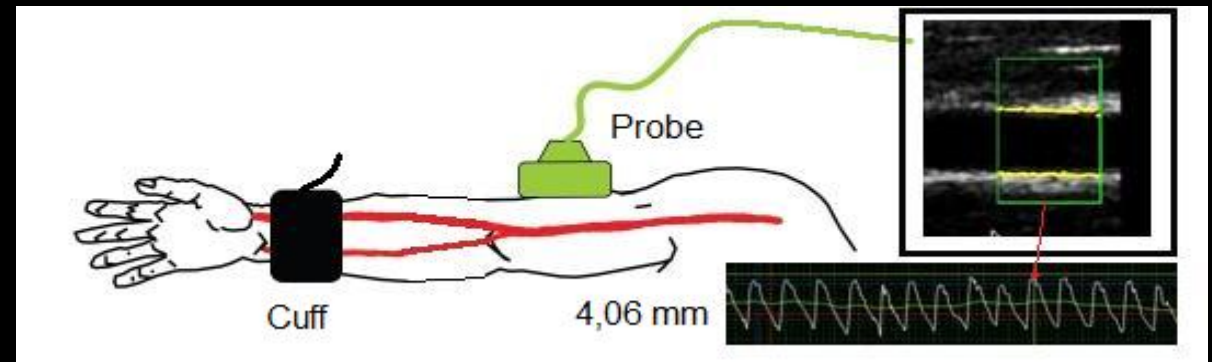


Sleep actigraphy (3 days)
Physiologic hot flash monitoring



Blood draw
Brachial ultrasound

- 304 peri/post women
- Age 40-60
- Nonsmoking
- Free of clinical CVD
- No SSRI/SNRI or HT



Trauma Measure

◎ Brief Trauma

Questionnaire (Koenen
KC et al, 2009)

- Validated against DSM-IV ($\kappa=.70$)
- Nurses Health II Study
- Lifetime occurrence of 9 traumatic exposures
 - Serious accident
 - Natural disasters
 - Life threatening illness
 - Beaten / mugged
 - Unwanted sexual contact
 - Death of child
 - Sexual harassment
 - Threat of injury / violence
 - Witnessing severe injury / death

Participants (N=272)

	Trauma Exposure	
	Yes (N=164, 60%)	No (N=108, 40%)
Age, M (SD)	54 (4)	54 (4)
Race, N (%)		
White	119 (73)	79 (73)
Non-white	45 (27)	29 (27)
BMI, M (SD)	29 (6)	30 (8)
SBP, M (SD)	121 (15)	118 (13)
LDL, M (SD)	136 (34)	130 (33)
Education, N (%) ≥ College	101 (62)	57 (53)
Financial strain, N (%) yes	51 (31)	32 (28)
Depressive symptoms, M (SD) CESD	8 (8)	7 (8)
Medications, N (%)		
BP-lowering	23 (14)	22 (20)
Lipid-lowering*	15 (9)	21 (19)
Antidepressants	3 (2)	3 (3)

* Differs between groups $p < .05$

Traumatic Exposures

%

Serious accident

18

Major disaster

10

Very serious or life-threatening illness

6

Attacked, beaten, mugged

20

Unwanted sexual contact

60% of women at

22

Death of child

least one

7

Sexual harassment at work

exposure

20

Seriously injured

14

Witnessed someone seriously injured / killed

21

Sum exposures

0

40

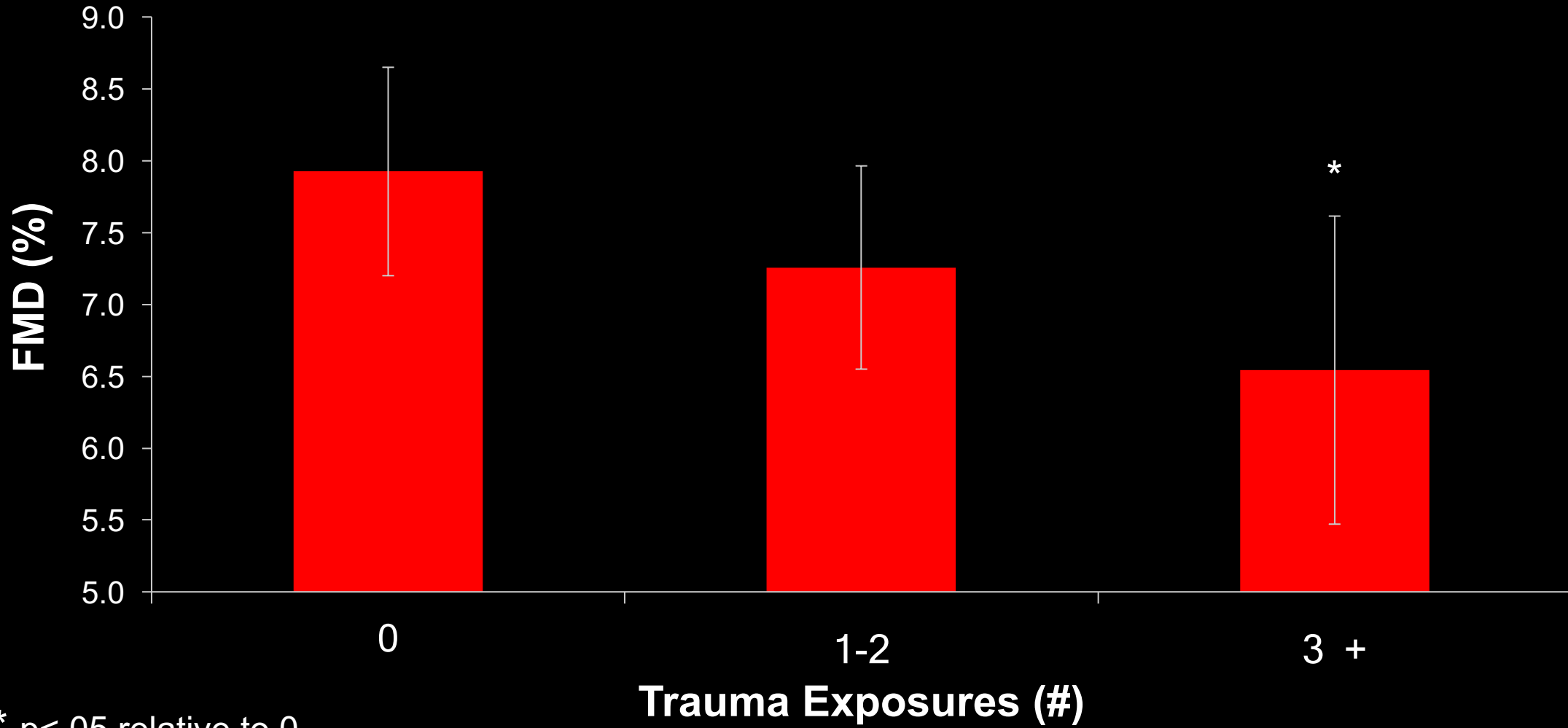
1-2

42

3+

18

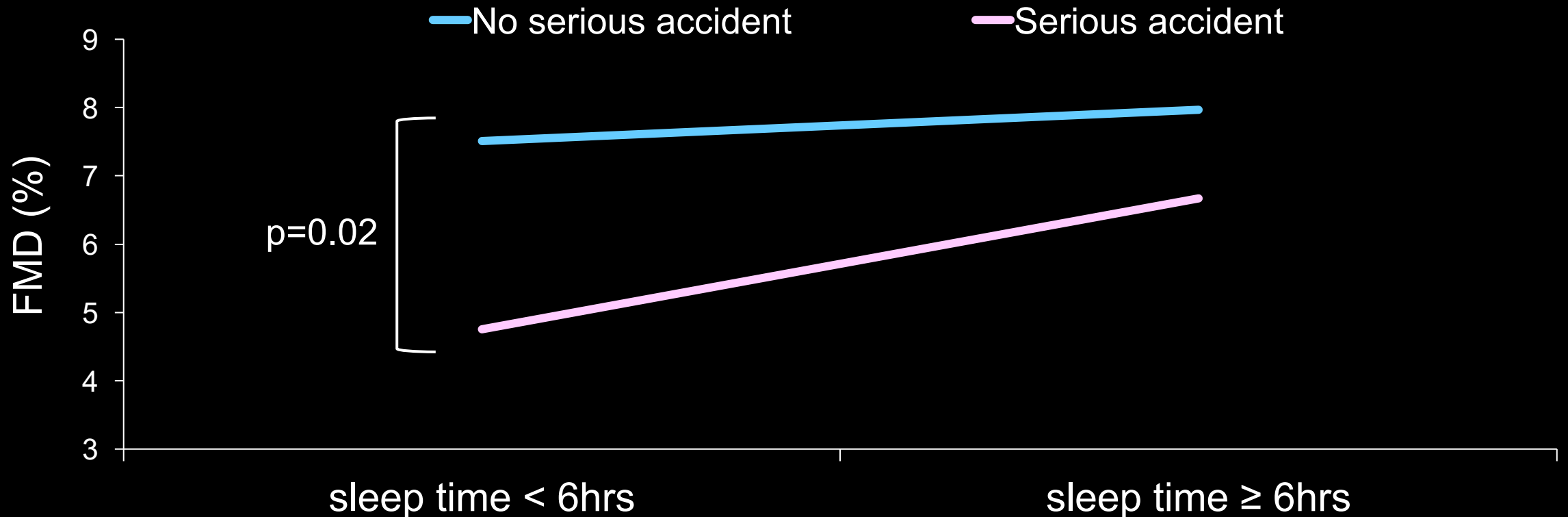
Trauma Exposure and Endothelial Function



* $p < .05$ relative to 0

Adjusted for baseline diameter, age, race, education, BMI, SBP, medications (beta agonist, anticonvulsant, for lipids, diabetes, lipids), parity, physical activity, HOMA, lipids, anxiety

Trauma and Endothelial Function Modified by Objective Sleep Time



Interaction $p < .05$

Adjusted for baseline diameter, age, race, BMI, SBP, medications (beta agonist, anticonvulsant), parity, physical activity, education, anxiety

Summary

- A greater number of lifetime trauma exposures related to poorer endothelial function
- Not accounted for by socioeconomic factors, CVD risk factors, health behaviors, mood, sleep
- Modified by sleep:
 - Exacerbated by short sleep / adequate sleep protective

Clinical and Public Health Implications

- Consider trauma exposure history in midlife women's physical health
- Higher risk group
 - Aggressive CVD risk factor control among women with trauma history
 - Treat mood / anxiety / trauma symptoms
 - Get women sleeping!
- Violence prevention as CVD risk reduction

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