Psychological well-being and risk of disease in older women

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Aging and Health

- "Average" aging
  - Increased disease burden
  - Accumulation of biological risk factors
    - Eg. inflammation

- Variable aging
  - Different pathways into later years

- Psychosocial influences
  - Typically negative
    - Depression
    - Chronic stress
  - Less attention on positive influences and successful aging

Outline

- Inflammation and inflammatory factors
- Four hypotheses about aging women
- Conclusions

Inflammation

Credits

- Carol Ryff
- Burton Singer
- Gayle Love
- Mary Hayney
- Richie Davidson
- Melissa Rosenkranz
- Heather Urry

Support
- Robert Wood Johnson Health & Society Scholars Program
- National Institute of Aging
- National Institute of Mental Health
Interleukin-6

- Increases with age (Ershler, 1993)
- Predicts age-related morbidity and mortality
  - Myocardial infarction in healthy men (Ridker et al., 2000)
  - Type 2 diabetes in middle-age women (Hu et al., 2004)
  - Disability in individuals >71 (Ferrucci et al., 1999)
  - Mortality in elderly (Harris et al., 1999)

Threshold IL-6 concentration = 2.5 pg/mL

Characteristics of Sample

- 78 women aged 61-90 years (mean = 74)
- Recruited from previous study of community relocation in Milwaukee and Madison (N = 300)
  - Marital status:
    - 17% married
    - 17% divorced
    - 56% widowed
  - 98% caucasian
  - Median income = $23,360
  - Education:
    - High school: 48.1%
    - College: 14.8%
    - Graduate/professional: 16.3%

Measures

- Psychological well-being
  - Ryff PWB scales
- Health status/health behavior
  - General Clinical Research Center (GCRC) overnight stay
  - Complete physical
  - Detailed medical histories
  - Inventory of current medications
- Sleep measures
  - "NightCap" in-home sleep monitoring system
  - Pittsburgh Sleep Quality Index (PSQI)
- Plasma IL-6
  - Assayed using high-sensitivity enzyme-linked immunosorbent assay (ELISA)

Four Hypotheses

- IL-6 levels will rise with age
- Psychological well-being will be associated with lower IL-6 levels
- Good sleep quality will be associated with lower IL-6 levels
- Well-being and sleep quality will interact in their associations with IL-6

Age and IL-6

Four Hypotheses

- Age will be associated with higher IL-6 levels
- Psychological well-being will be associated with lower IL-6 levels
- Good sleep quality will be associated with lower IL-6 levels
- Well-being and sleep quality will interact in their associations with IL-6
**Interleukin-6 – Psychosocial Influences**

- Circulating concentrations
  - Higher levels associated with...
    - lower social position (Hemmingway et al., 1999)
    - clinical depression (Penninx et al., 2003)
    - caregiver stress (Lutgen-Dietz et al., 1999)
    - rate of IL-6 accumulation higher in caregivers (Kiecolt-Glaser et al., 2003)
  - Lower levels associated with...
    - religious participation (Lutgen-Dietz et al., 2003)
    - Predicts lower mortality

**Psychological Well-Being**

- Eudaimonic well-being
  - From Aristotelian ideal of the "good life" ("eudaimonia")
    - Pursuit of personal excellence rather than pleasure
      - Important personal goals
      - High-quality relationships

**Psychological Well-Being**

- PWB scales (Ryff, 1995)
  - Autonomy
    - "I'm not afraid to voice my opinions"
  - Environmental mastery
    - "I'm good at managing my responsibilities"
  - Personal growth
    - "I'm the kind of person who likes to try new things"
  - Positive relationships
    - "I feel that I get a lot out of my friendships"
  - Purpose in life
    - "I enjoy making plans for the future and working to make them a reality"
  - Self-acceptance
    - "I like most aspects of personality"

**Social Relationships and IL-6**

- Four Hypotheses
  - Age will be associated with higher IL-6 levels
  - Psychological well-being will be associated with lower IL-6 levels
  - Good sleep quality will be associated with lower IL-6 levels
  - Well-being and sleep quality will interact in their associations with IL-6

**Sleep**

- Sleep quality declines with age.
- IL-6 levels are higher in people who don’t sleep well.

**Sleep and social relationships**

- Loneliness (Cacioppo et al., 2002)
- Marital insecurity (Carmichael and Reis, 2005)
Four Hypotheses

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- Well-being and sleep quality will interact in their associations with IL-6

Sleep and IL-6

Sleep, Well-Being, and IL-6

Conclusions

- Successful aging
  - Reduced biological risk of disease
    - Here, lower levels of plasma IL-6
  - Social well-being predicts lower IL-6
  - Sleep and social well-being appear to have a compensatory relationship
  - Eudaimonic well-being predicts lower levels of inflammatory factors
    - Role for life engagement