

Chronic Conditions and Physical Health Days Among Older Men

Results from NHANES 2001-2018

Elwood Research

Independent Research

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Background and Rationale

Aging Population:

- By 2050: 88 million Americans aged 65+ (double 2015)
- Men face unique health challenges
- Higher mortality despite fewer reported conditions

Health-Related Quality of Life:

- CDC Healthy Days: validated population measure
- Captures burden of physical health problems
- Simple yet powerful 0-30 day metric

Key Questions

- How do chronic conditions affect physical health days?
- What role do socioeconomic factors play?
- Can physical activity protect against poor health days?

Study Objectives

Primary Objective:

- Identify association between chronic disease burden and poor physical health days among U.S. men aged 60+

Secondary Objectives:

- Examine mental health-physical health relationships
- Assess socioeconomic disparities
- Evaluate racial/ethnic differences
- Determine protective effects of physical activity

Key Hypotheses:

- Dose-response relationship: more chronic conditions → more poor health days
- Higher SES protective; racial disparities persist
- Physical activity protective even among those with chronic conditions

Data Source:

- NHANES 2001-2018 (9 cycles)
- Nationally representative
- Complex sampling design

Study Population:

- Males aged 60+ years
- Final $n = 4,922$
- Weighted: 22.3 million U.S. men

Primary Outcome:

- Poor Physical Health Days (0-30)
- “Days in past 30 when physical health not good”

Statistical Approach:

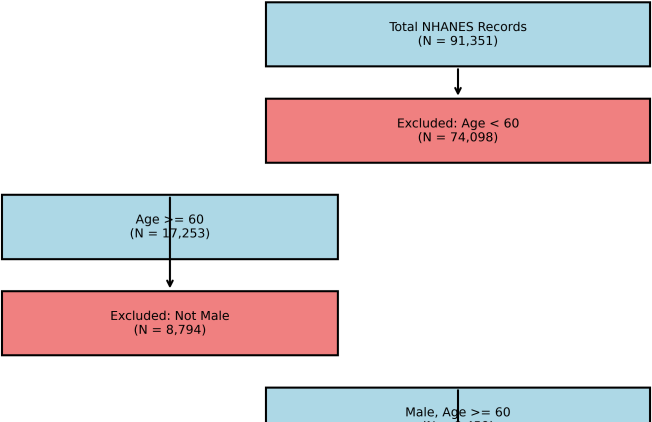
- Negative binomial regression
- Survey-weighted analysis
- Adjusted for demographics, SES, behaviors

Study Flow and Sample Selection

STROBE Flow Diagram

Older Men and Physical Health Days Study

NHANES 2001-2018



Sample Characteristics (n = 4,922)

Characteristic	%		Characteristic	%
<i>Age Group</i>			<i>Education</i>	
60-69 years	45.9		< High School	23.8
70-79 years	33.6		High School Grad	23.6
80+ years	20.5		Some College	22.9
			College Graduate+	29.7
<i>Race/Ethnicity</i>			<i>Chronic Conditions</i>	
Non-Hispanic White	81.7		0 conditions	18.7
Non-Hispanic Black	7.8		1 condition	30.9
Mexican American	3.7		2 conditions	29.8
Other	6.8		3+ conditions	20.6

Key Finding

81.3% of older men have ≥ 1 chronic condition; 20.6% have multimorbidity (3+ conditions)

Primary Finding: Chronic Conditions and Physical Health Days

Dose-Response Relationship

Each additional chronic condition progressively increases poor physical health days

Chronic Conditions	IRR	95% CI	p-value
1 Condition	1.22	1.22–1.22	<0.001
2 Conditions	1.55	1.55–1.55	<0.001
3+ Conditions	2.08	2.08–2.08	<0.001

Reference: 0 chronic conditions

- Men with 3+ conditions have **twice the rate** of poor physical health days
- Highly statistically significant ($p < 0.001$) at all levels
- Represents >4 additional poor health days per month

Racial and Socioeconomic Disparities Persist

Racial/Ethnic Disparities:

- Mexican American: $IRR = 1.43$
 - 43% higher rate than White men
 - Persists despite Medicare eligibility
- Non-Hispanic Black: $IRR = 0.94$
 - Similar to White men

Socioeconomic Gradients:

- Income (per unit PIR): $IRR = 0.92$
 - 8% reduction per unit increase
- Education:
 - <High School: $IRR = 1.18$
 - 18% higher than college grads

Key Insight

Disparities persist in Medicare-eligible population → health insurance alone insufficient to eliminate inequities

Physical Activity: A Key Protective Factor

Physical Activity Effect

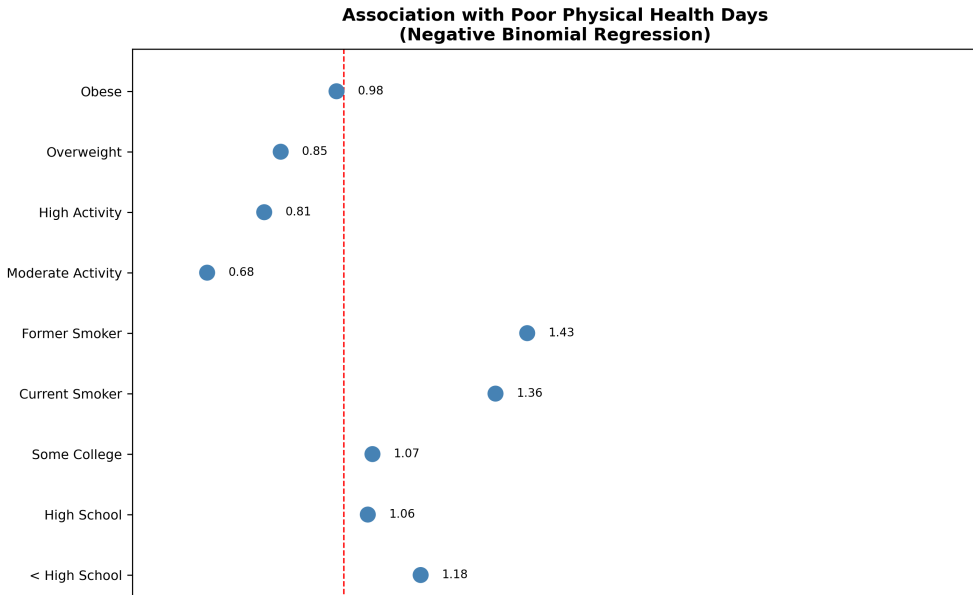
High physical activity associated with 19% fewer poor physical health days

Protective Factor	IRR
High Physical Activity	0.81
Income (per unit PIR)	0.92
Non-Hispanic Black	0.94

Risk Factor	IRR
3+ Chronic Conditions	2.08
Mexican American	1.43
Current Smoker	1.36
<High School Education	1.18

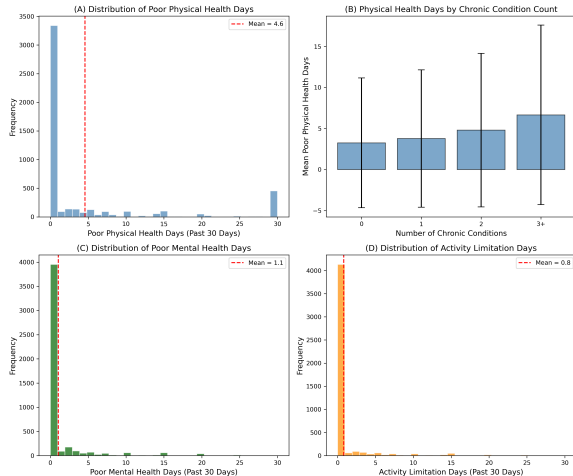
- Physical activity protective **even among those with chronic conditions**
- Benefits extend beyond disease prevention
- Direct effects on physical functioning and well-being

Forest Plot: Summary of Associations

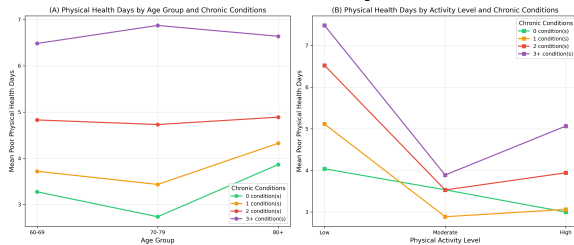


Outcome Distribution and Stratified Analyses

Outcome Distributions



Stratified Analyses



Consistent associations across age, race, activity level

Zero-inflated, right-skewed distributions

Robustness of Findings

Sensitivity Analyses Confirm Primary Results

Analysis	1 Condition	2 Conditions	3+ Conditions
Primary (Negative Binomial)	1.22	1.55	2.08
Poisson Regression	1.25	1.59	2.09
Zero-Inflated NB	1.22	1.55	2.08
Age 60-69 (n=2,260)	1.19	1.59	2.08
Age 70-79 (n=1,653)	1.22	1.71	2.50
Age 80+ (n=1,009)	1.13	1.18	1.50

- Dose-response pattern consistent across model specifications
- Age-stratified analyses show stronger effects in 70-79 group
- Zero-inflation (67.8%) appropriately addressed

Conclusions and Implications

Key Findings:

- Strong dose-response: 3+ conditions \rightarrow 2 \times rate of poor health days
- Disparities persist despite Medicare coverage
- Physical activity highly protective (IRR = 0.81)
- 14.8% report \geq 14 poor physical health days

Clinical Implications:

- Address multimorbidity comprehensively
- Prioritize physical activity counseling
- Attend to social determinants of health

Public Health Priorities

- Chronic disease prevention
- Physical activity promotion
- Health equity initiatives
- Address structural determinants

Bottom Line

Physical activity is a key modifiable protective factor for older men, even among those with chronic conditions.

Strengths and Limitations

Strengths:

- Nationally representative sample
- Large sample ($n = 4,922$)
- Validated outcome measure
- 18 years of data (9 cycles)
- Survey-adjusted analysis
- Focus on understudied population

Limitations:

- Cross-sectional design
- Self-reported data
- Excludes institutionalized
- Potential residual confounding
- Cannot establish causality

Future Research Directions

Needed Research:

- **Longitudinal studies:** Causal relationships and trajectories over time
- **Intervention studies:** RCTs targeting physical activity and multimorbidity
- **Qualitative research:** Men's experiences and perspectives on health
- **Gender-specific approaches:** Develop men-focused health interventions
- **Health equity research:** Address structural determinants of disparities

Call to Action

Addressing determinants of poor physical health days requires coordinated efforts across clinical practice, public health, and policy to help older men live longer, healthier, more fulfilling lives.

Acknowledgments

Data Source:

National Health and Nutrition Examination Survey (NHANES)
National Center for Health Statistics (NCHS)
Centers for Disease Control and Prevention (CDC)

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This research used publicly available de-identified NHANES data.
No direct human subjects involvement.