



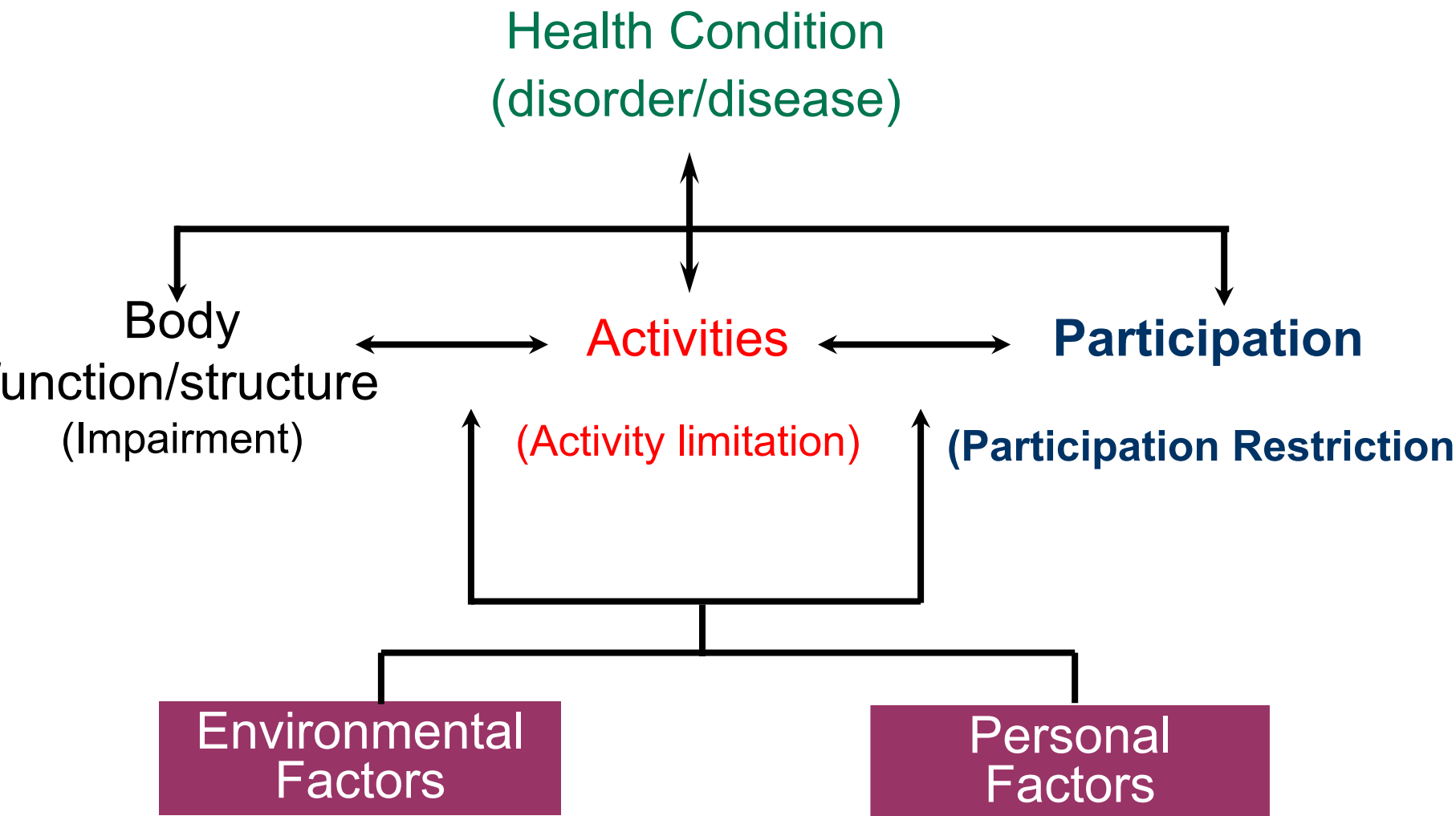
K E E L E  
UNIVERSITY

## Primary Care Musculoskeletal Research Centre

# The prevalence and associations of participation restriction in adults aged 50 years and over in the general population

**Ross Wilkie, George Peat, Elaine Thomas, Peter Croft**

# International Classification of Functioning, Disability & Health (WHO, 2001)



# Systematic review of existing health instruments

- No existing instruments could measure participation restriction exclusively
- The concept of participation restriction was ambiguous

**Source:** Wilkie *et al.*, *Arthritis Rheum* 2004;**51**:755-762.

# Keele Assessment of Participation

## Mobility outside the home

During the last 4 weeks, I have moved outside my home,  
as and when I have wanted?

All  
the time



Most of  
the time



Some of  
the time



A little  
of the time



None of  
the time



**Participation**

**Participation restriction**

Source: Wilkie *et al.*, *Qual Life Res* 2005;14:1889-1899.

# Keele Assessment of Participation

- 1. Mobility within the home**
- 2. Mobility outside the home**
- 3. Self-care**
- 4. Looking after belongings**
- 5. Looking after the home**
- 6. Looking after dependants**
- 7. Interpersonal interaction**
- 8. Managing money**
- 9. Work**
- 10. Education**
- 11. Social activities**

# North Staffordshire Osteoarthritis Project (NorStOP)

- Population-based cross-sectional survey
- Postal self-complete questionnaire
- A representative sample of adults aged 50 years and over in North Staffordshire (n=11,309)

**Source:** Thomas *et al.* *BMC Musculoskeletal Dis* 2004;5:2

# Statistical analysis

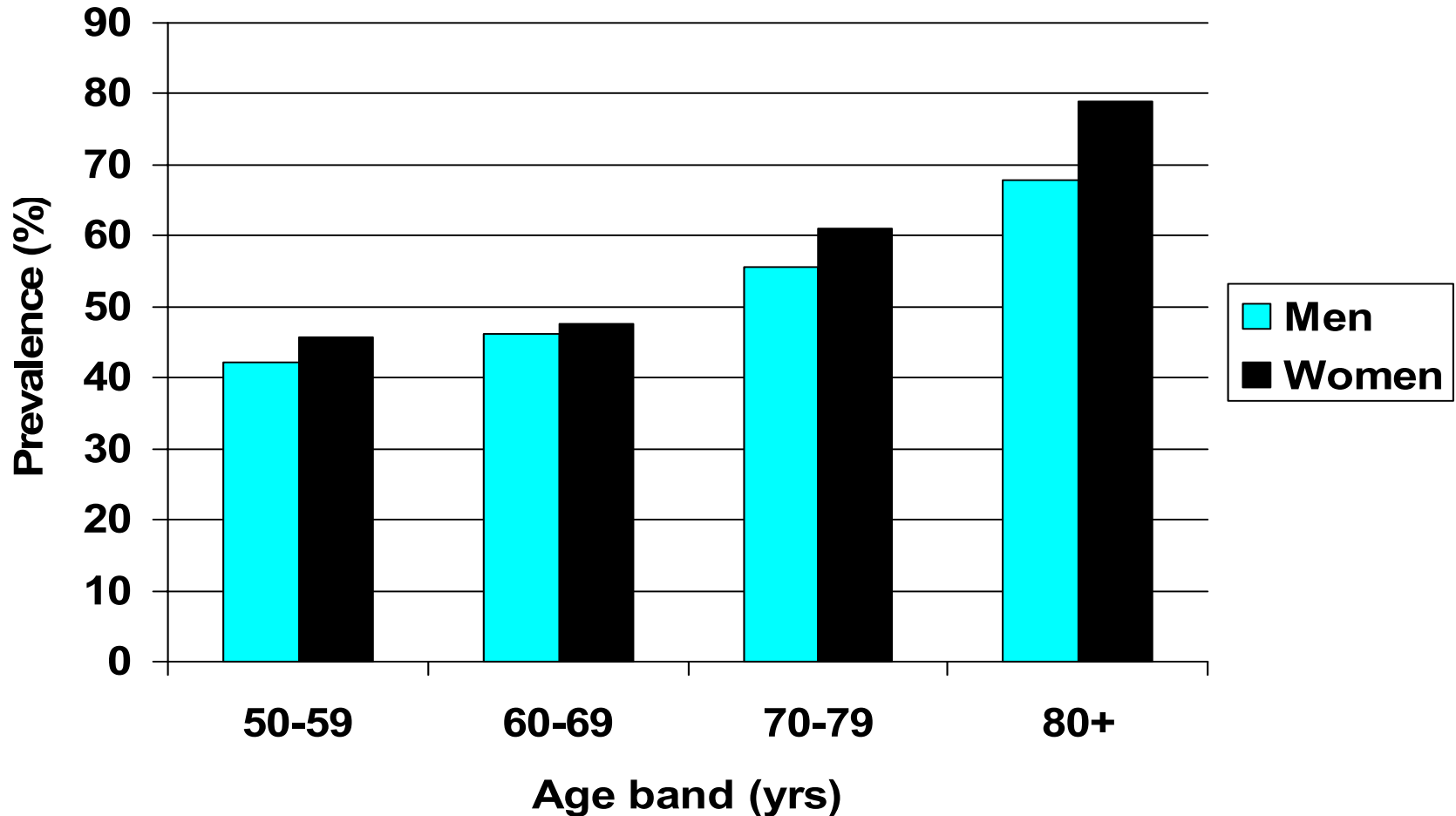
- Prevalence estimates for participation restriction
- Factors associated with participation restriction
  - a “health and disability model”
  - the additional contribution of socioeconomic factors

# Prevalence estimates

- Any participation restriction
  - One or more aspects of life (Y/N)
- Amounts of participation restriction
  - Minimal (1-3 aspects of life), Moderate (4-6), Substantial (7-11)
- Restriction in each aspect of life
  - e.g. mobility outside the home (Y/N)

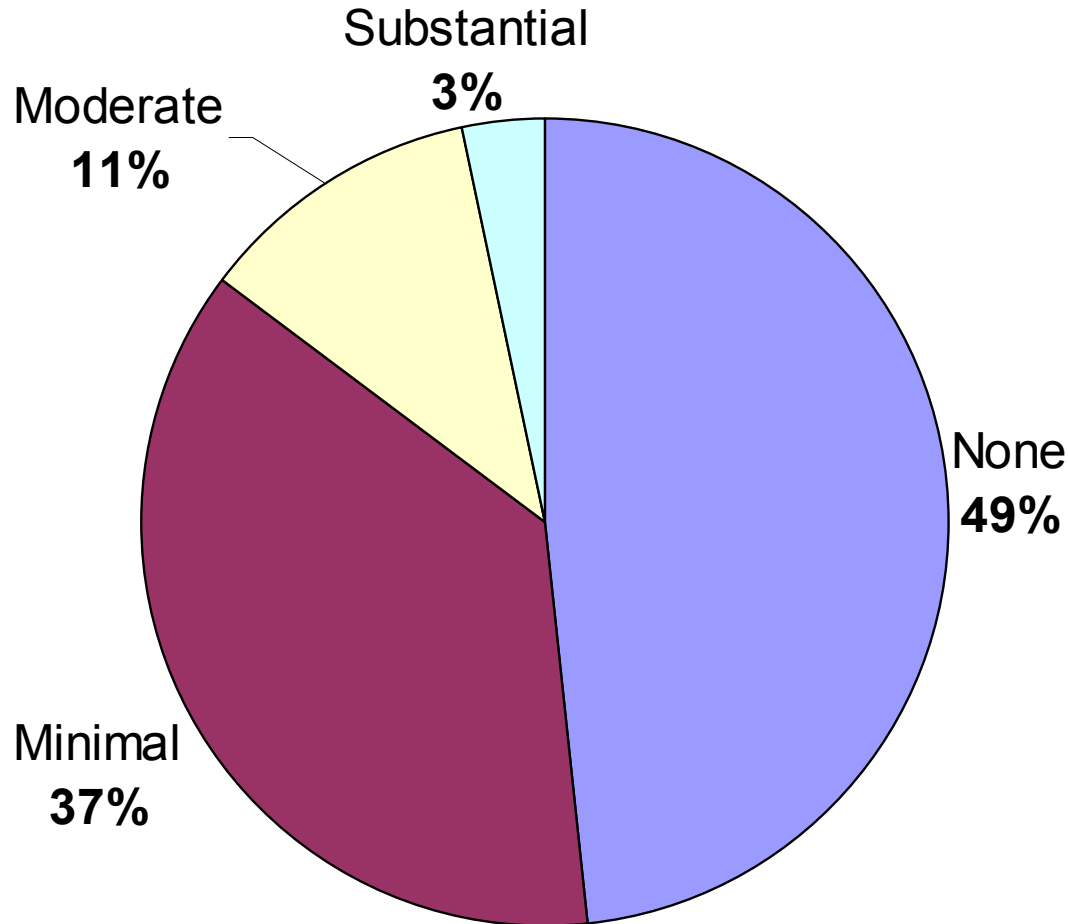


# Prevalence estimates: Any participation restriction



## Prevalence estimates:

# Amounts of participation restriction



## Prevalence estimates:

# Restriction in each aspect of life

Mobility outside the home	25.9%
Managing money	19.2%
Interpersonal interaction	16.2%
Looking after the home	15.8%
Mobility within the home	14.1%
Social activities	13.6%
Looking after belongings	11.5%
Self-Care	10.6%
Looking after dependants	5.4%
Education	4.1%
Work	3.8%

Prevalence estimates:

# Restriction in each aspect of life

Mobility outside the home

Managing money

Interpersonal interaction

Looking after the home

Mobility within the home

Social activities

Looking after belongings

Self-Care

Looking after dependants

Education

Work

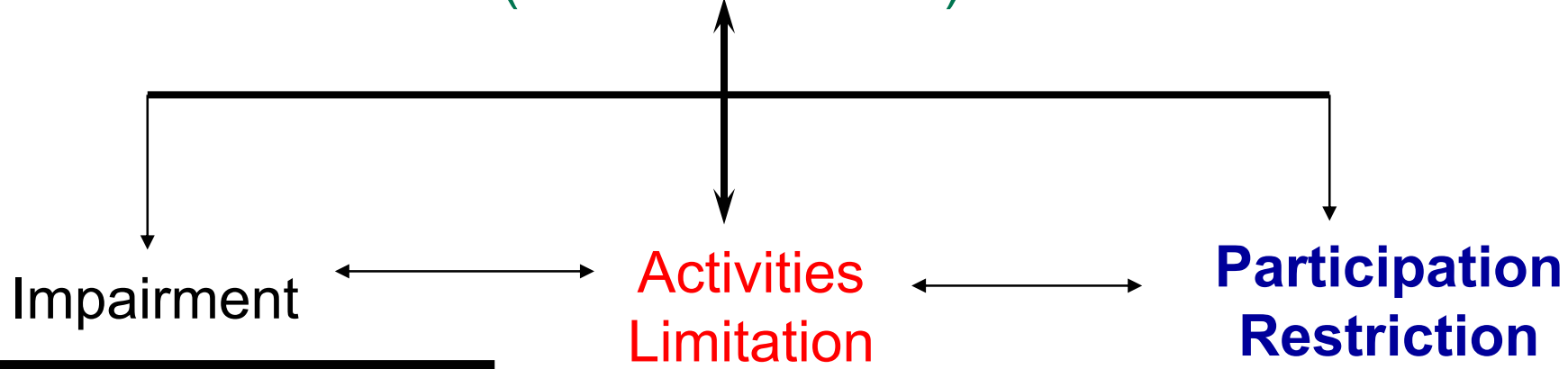
*Prevalence  
increases with  
increasing age*

# Factors associated with participation restriction: A “health and disability model”

- Logistic regression
  - Dependent variable:
    - any participation restriction (one or more aspects of life)
  - Covariates:
    - age, gender
    - selected concurrent health conditions / impairments
    - activity limitation
- Model derived in random 60% of sample, validated in remaining 40%

# Number of health conditions

Health Condition  
(disorder/disease)



Impairment

Activities  
Limitation

Participation  
Restriction

SF-36 PF

No. of joint pains

No. of symptoms

No. of pain areas

Anxiety

Depression

Cognitive impairment

Body Mass Index

# Factors associated with participation restriction: A “health and disability model”

## **Univariate associations**

- All health and disability covariates were significantly associated with participation restriction
- Associations increased with the number of health conditions and impairments
- Strongest univariate associations were with depression and activity limitation

## Age-gender adjusted OR (95%CI)

### Depression (HAD)

Non-case	1	
Possible case	5.2	(4.4, 6.1)
Case	11.3	(8.6, 14.8)

### Activity limitation (SF-36 PF)

Highest quartile	1	
2 <sup>nd</sup> highest quartile	1.2	(1.0, 1.4)
3 <sup>rd</sup> highest quartile	2.4	(2.0, 2.8)
Lowest quartile	13.3	(11.0, 16.0)



# Factors associated with participation restriction: A “health and disability model”

- Age
- Number of health conditions
- Number of peripheral joint pains
- Anxiety
- Depression
- Cognitive impairment
- Activity limitation

# Factors associated with participation restriction: A “health and disability model”

**Adj. OR (95%CI)**

- **Aged 80+ years** **2.0 (1.5, 2.8)**
- Number of health conditions
- Number of peripheral joint pains
- Anxiety
- Depression
- Cognitive impairment
- Activity limitation

# Factors associated with participation restriction: A “health and disability model”

**Adj. OR (95%CI)**

- Aged 80+ years 2.0 (1.5, 2.8)
- **2+ health conditions** **1.5 (1.0, 2.0)**
- Number of peripheral joint pains
- Anxiety
- Depression
- Cognitive impairment
- Activity limitation

## Factors associated with participation restriction:

# A “health and disability model”

**Adj. OR (95%CI)**

- |                                               |                       |
|-----------------------------------------------|-----------------------|
| • Aged 80+ years                              | 2.0 (1.5, 2.8)        |
| • 2+ health conditions                        | 1.5 (1.0, 2.0)        |
| • <b>Pain in hands +hips + knees + feet</b>   | <b>1.5 (1.1, 2.1)</b> |
| • <b>Anxiety (HAD &gt; 11)</b>                | <b>1.3 (1.0, 1.7)</b> |
| • <b>Depression (HAD &gt; 11)</b>             | <b>4.9 (2.9, 7.7)</b> |
| • <b>Cognitive impairment (FLP &gt; 22.4)</b> | <b>1.7 (1.4, 2.2)</b> |
| • Activity limitation                         |                       |

# Factors associated with participation restriction: A “health and disability model”

**Adj. OR (95%CI)**

- Aged 80+ years 2.0 (1.5, 2.8)
- 2+ health conditions 1.5 (1.0, 2.0)
- Pain in hands + hips + knees + feet 1.5 (1.1, 2.1)
- Anxiety (HAD > 11) 1.3 (1.0, 1.7)
- Depression (HAD > 11) 4.9 (2.9, 7.7)
- Cognitive impairment (FLP > 22.4) 1.7 (1.4, 2.2)
- **Activity limitation (SF-36 PF ≤ 35) 5.2 (3.8, 7.1)**

# Associations between participation restriction and number of painful peripheral joint sites

No. of sites	0	Adj.OR <sup>§</sup> (95%CI)	Adj.OR <sup>*</sup> (95%CI)	Adj.OR <sup>†</sup> (95%CI)
	1	1	1	1
	1	1.2 (1.1, 1.4)	1.1 (0.5, 1.5)	0.9 (0.7, 1.1)
	2	1.7 (1.5, 2.0)	1.2 (0.8, 1.6)	1.0 (0.8, 1.2)
	3	2.6 (2.2, 3.0)	1.4 (1.0, 1.9)	1.1 (0.9, 1.5)
	4	4.7 (3.9, 5.7)	<b>1.7 (1.2, 2.2)</b>	1.5 (1.1, 2.1)

§ Adjusted for age and gender only

\* **Adjusted for age, gender and activity limitation**

† Adjusted for age, gender, activity limitation + no. of health conditions, anxiety, depression and cognitive impairment

# Associations between participation restriction and number of painful peripheral joint sites

No. of sites	0	Adj.OR*(95%CI)	Adj.OR*(95%CI)	Adj.OR†(95%CI)
	1	1	1	1
	1	1.2 (1.1, 1.4)	1.1 (0.5, 1.5)	0.9 (0.7, 1.1)
	2	1.7 (1.5, 2.0)	1.2 (0.8, 1.6)	1.0 (0.8, 1.2)
	3	2.6 (2.2, 3.0)	1.4 (1.0, 1.9)	1.1 (0.9, 1.5)
	4	4.7 (3.9, 5.7)	1.7 (1.2, 2.2)	<b>1.5 (1.1, 2.1)</b>

§ Adjusted for age and gender only

\* Adjusted for age, gender and activity limitation

† Adjusted for age, gender, activity limitation **+ no. of health conditions, anxiety, depression and cognitive impairment**

# Validity of the “Health and disability” model

- Validation sample

PPV = 77.0%

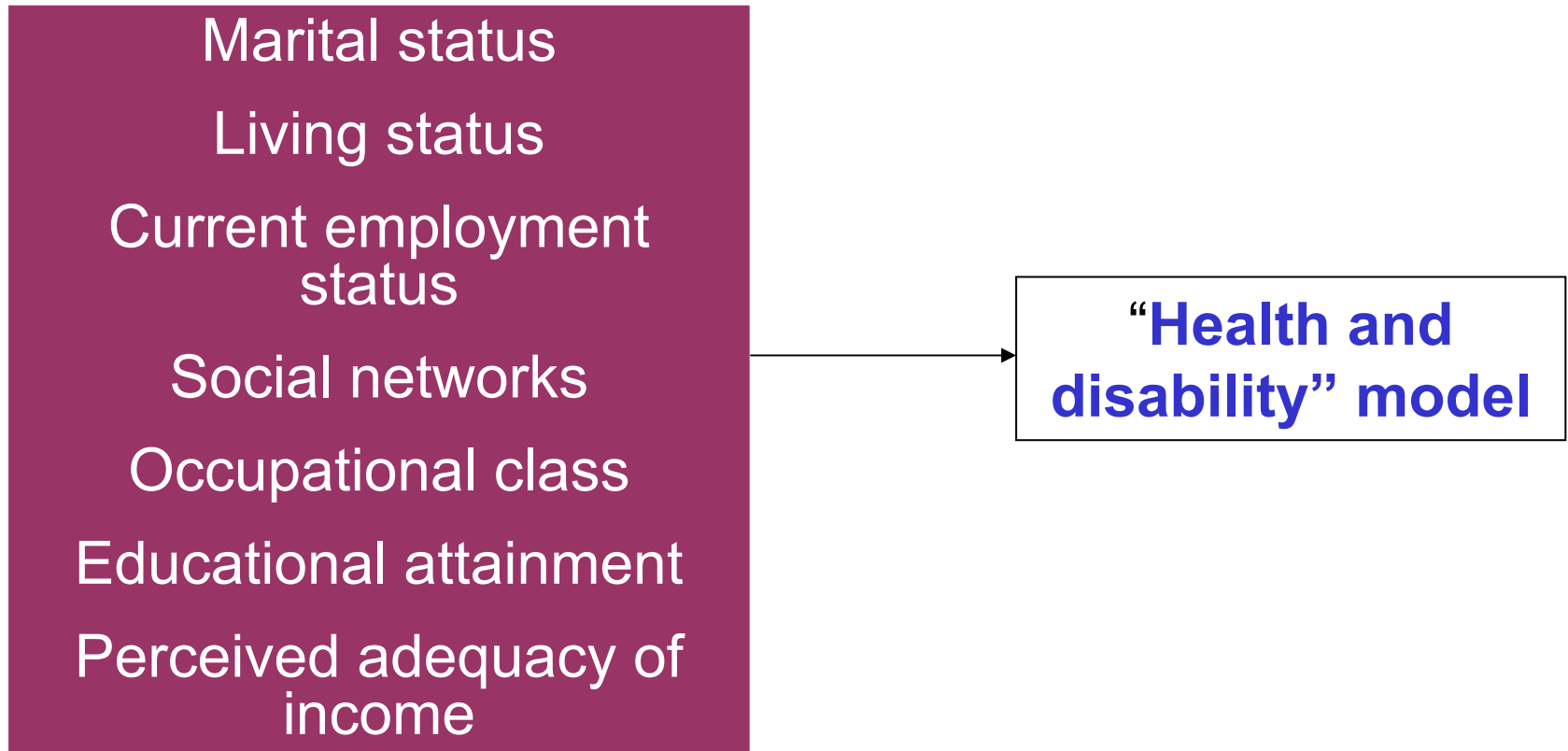
NPV = 67.8%

Overall prediction accuracy = 71.5%



Factors associated with participation restriction:

# Additional contribution of socioeconomic factors



Factors associated with participation restriction:

## Additional contribution of socioeconomic factors

- Educational attainment
- Current employment status
- Occupational class
- Perceived adequacy of income

Factors associated with participation restriction:

## Additional contribution of socioeconomic factors

**Adj. OR (95%CI)**

- **School-age education only** 1.3 (1.1, 1.5)
- Current employment status
- Occupational class
- Perceived adequacy of income

Factors associated with participation restriction:

## Additional contribution of socioeconomic factors

**Adj. OR (95%CI)**

- School-age education only 1.3 (1.1, 1.5)
- **Currently not working due to illness 2.6 (1.9, 3.5)**
- Occupational class
- Perceived adequacy of income

Factors associated with participation restriction:

## Additional contribution of socioeconomic factors

**Adj. OR (95%CI)**

- School-age education only 1.3 (1.1, 1.5)
- Currently not working due to illness 2.6 (1.9, 3.5)
- **Current/last job title:**
  - Lower supervisory 1.6 (1.2, 2.3)**
  - Semi-routine 1.5 (1.1, 2.1)**
  - Routine 1.6 (1.2, 2.2)**
- Perceived adequacy of income

Factors associated with participation restriction:

## Additional contribution of socioeconomic factors

**Adj. OR (95%CI)**

- School-age education only 1.3 (1.1, 1.5)
- Currently not working due to illness 2.6 (1.9, 3.5)
- Current/last job title:
  - Lower supervisory 1.6 (1.2, 2.3)
  - Semi-routine 1.5 (1.1, 2.1)
  - Routine 1.6 (1.2, 2.2)
- **Find it a strain to get by (financially) 2.8 (1.9, 4.1)**

# Conclusions (1)

**Participation restriction  
is not the same as  
activity limitation**

# Conclusions (2)

- Participation restriction is common and increases with age
- Participation restriction is multiply determined by a range of health and socio-economic factors
- Further studies are required to determine strategies to prevent and reduce participation restriction in older adults in the community



# Acknowledgements

- Primary Care Sciences Administration Team

