

**Prevalence and associated factors of frailty among community-dwelling older people in rural South India – A cross-sectional study**

Kirubakaran Kesavan Kendhapedi, Niveditha Devasenapathy

Indian Institute of Public Health – Delhi, Public Health Foundation of India

**SUPPLEMENTARY DATA**

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## Supplementary – 1: Methods of scoring of outcome

### Section – 1: List of variables in Short Fall Efficacy Scale and its cut points

- |   |                          |
|---|--------------------------|
| 1. Getting dressed or undressed                     |                          |
| 2. Taking bath or shower                            | Not at all concerned – 1 |
| 3. Getting in or out of a chair                     | Somewhat concerned – 2   |
| 4. Going up or down stairs                          | Fairly concerned – 3     |
| 5. Reaching something above your head on the ground | Very concerned – 4       |
| 6. Walking up or down a slope                       |                          |
| 7. going out to a social event                      |                          |

Short FES-I score range: 7 – 28

#### Cut points:

Low concern of fall :7-8

Moderate concern :9-13

High concern :14-28

### Section – 2: List of variables in Fried’s phenotype and its cut points

- |                      |  |
|----------------------|--|
| 1. Weight loss:      | Yes – 1; No – 0                                  |
| 2. Exhaustion:       | Moderate & Most – 1; Rarely & Some or little – 0 |
| 3. Physical activity | Less frequent – 1; More frequent – 0             |
| 4. Slowness          | Slow – 1; Fast - 0                               |

Slowness is defined as a highest 20% of the participants adjusted for the sex and height.

Men	Cut off time for frailty
Height $\leq$ 173cm	$\geq$ 7 seconds
Height $>$ 173 cm	$\geq$ 6 seconds
Women	
Height $\leq$ 159cm	$\geq$ 7 seconds
Height $>$ 159 cm	$\geq$ 6 seconds

- |             |                      |
|-------------|----------------------|
| 5. Weakness | Weak – 1; Strong – 0 |
|-------------|----------------------|

Weakness is defined as a lowest 20% of the participants adjusted for the sex and BMI quartiles

Men	Cut off grip strength (kg) for frailty
BMI $\leq$ 24	$\leq$ 29

BMI 24.1 – 26	≤ 30
BMI 26.1 – 28	≤ 31
BMI > 28.1	≤ 32
Women	Cut off grip strength (kg) for frailty
BMI ≤ 23	≤ 17
BMI 23.1 – 26	≤ 17.3
BMI 26.1 – 29	≤ 18
BMI > 29	≤ 21

**Scoring:** 0 = Robust; 1-2 = Pre-frail; 3-5 = Frail

### Section – 3: List of variables included in Frailty index and its cut points

General health (1 item) Very good=0, Good=0.25,  
Self-rated health Moderate=0.5, Bad=0.75 Very bad=1

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Medically diagnosed conditions (9 items) No=0, Yes=1  
Arthritis; stroke; angina; diabetes; COPD;  
asthma; depression; hypertension; cataracts

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Medical symptoms (4 items) In the last 30 days how much..?  
.. of bodily aches or pain did you have?  
.. of a problem di you have with sleeping? None=0, Mild=0.25,  
.. difficulty in seeing across the road? Moderate=0.5, Severe=0.75,  
.. difficulty in seeing at arm's length? Extreme=1

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Functional activities assessment (13 items). In the last 30 days how much difficulty did you have..?  
.. sitting for long periods  
.. walking 100 meters  
.. standing up from sitting down  
.. standing for long periods  
.. climbing one flight of stairs without resting None=0, Mild=0.25,  
.. stooping, kneeling or crouching Moderate=0.5, Severe=0.75,  
.. picking up things with fingers Extreme=1  
.. extending arms above shoulders

- .. concentrating for 10 minutes
- .. walking long distance (1 km)
- .. carrying things
- .. getting out of home

How much is respondent emotionally affected by health condition?

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Activities of daily living (ADLs) (10 items). In the last 30 days how much difficulty..?

- .. taking care of your household responsibilities?
  - .. joining community activities
  - .. bathing/washing
  - .. dressing
  - .. performing day to day work
  - .. moving around inside home
  - .. eating
  - .. getting up from lying down
  - .. getting to and using the toilet
  - .. getting where you want to go?
- None=0, Mild=0.25,  
Moderate=0.5, Severe=0.75,  
Extreme=1
- 

Body Mass Index (1 item)

>18.5 = 0 (Reference)  
<18.5 = 1 (Underweight)

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Grip strength (1 item)

Men:  
(0<BMI<=24 and grip<=29) or  
(24<BMI<=26 and grip <=30) or  
(26<BMI<=28 and grip<=31) or  
(28<BMI<=40 and grip<=32) = 1 (Weak)  
Women:  
(0<BMI<=23 and grip<=17) or  
(23<BMI<=26 and grip <=17.3) or  
(26<BMI<=29 and grip<=18) or  
(29<BMI<=40 and grip<=21) = 1 (Weak)

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Gait speed (1 item)

Time (sec) at normal pace over 5 meters

(0<time<=10) = 0 (Normal)  
(10<time<=99) = 1 (Slow)

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Scoring:  $\sum(\text{variables})/40$

Score range: 0 – 1

**Cut points:** Robust = 0 – 0.2, Frail = 0.2 – 1.0

#### Section – 4: List of variables in Tilburg Frailty Indicator and its cut points

##### Physical components (8 items)

- |   |                   |
|---|-------------------|
| 1. Physical healthy                       | Yes = 0, No = 1   |
| 2. Lost weight recently without intention | } No = 0, Yes = 1 |
| 3. Difficulty in walking                  |                   |
| 4. Difficulty in maintaining your balance |                   |
| 5. Poor vision                            |                   |
| 6. Poor hearing                           |                   |
| 7. Lack of strength in your hands         |                   |
| 8. Physical tiredness                     |                   |

##### Psychological Components (4 items)

- |   |                               |
|---|-------------------------------|
| 9. Problems with memory                       | No and sometimes = 0, Yes = 1 |
| 10. Felt down during last month               | No = 0, Yes and sometimes = 1 |
| 11. Felt nervous or anxious during last month | No = 0, Yes and sometimes = 1 |
| 12. Are you able to cope with problems well   | Yes = 0, No = 1               |

##### Social components (3 items)

- |  |                 |
|--|-----------------|
| 13. Live alone                               | No = 0, Yes = 1 |
| 14. Missing people around you                | No = 0, Yes = 1 |
| 15. Receive enough support from other people | Yes = 0, No = 1 |

**Cut point:** Frail =  $\geq 5$ , Robust =  $<5$

Supplementary table – 1: Factors associated with frailty defined by physical definition (FP)

Associated Factors	Pre-frailty vs. Robust (n= 408)				Frailty vs. Robust (n= 408)			
	Crude Odds Ratio		Adjusted Odds Ratio		Crude Odds Ratio		Adjusted Odds Ratio	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age in 5 years interval	1.16	0.92 – 1.47	1.21	0.90 – 1.61	1.90	1.46 – 2.47	<b>2.08</b>	<b>1.47 – 2.94</b>
Sex								
Male	1	1	1	1	1	1	1	1
Female	2.43	1.49 – 3.96	<b>1.97</b>	<b>1.03 – 3.74</b>	2.12	1.21 – 3.70	1.70	0.67 – 4.79
Education status								
Educated	1	1	1	1	1	1	1	1
No formal education	1.83	1.05 – 3.21	1.32	0.71 – 2.43	4.89	2.64 – 9.06	<b>2.83</b>	<b>1.38 – 5.79</b>
SES								
Richest	1	1	1	1	1	1	1	1
Middle income	1.33	0.73 – 2.45	1.82	0.94 – 3.57	2.06	1.01 – 4.19	<b>3.15</b>	<b>1.29 – 7.73</b>
Poorest	1.43	0.77 – 2.65	1.66	0.73 – 3.76	3.49	1.72 – 7.06	<b>3.55</b>	<b>1.30 – 9.68</b>
Living arrangement								
With Children	1	1	1	1	1	1	1	1
With Spouse	0.50	0.29 – 0.86	0.45	0.23 – 0.89	0.75	0.40 – 1.41	0.69	0.31 – 1.56
Alone	1.55	0.70 – 3.44	0.83	0.33 – 2.08	2.56	1.08 – 6.03	0.76	0.26 – 2.31
Routine work								
Strenuous/Moderate	1	1	1	1	1	1	1	1
Some/Minimal	2.16	1.28 – 3.64	1.69	0.96 – 2.95	4.34	2.19 – 8.59	<b>2.52</b>	<b>1.12 – 5.67</b>
Alcohol								
Never	1	1	1	1	1	1	1	1
Current/Past	0.48	0.28 – 0.80	0.86	0.42 – 1.76	0.65	0.36 – 1.18	0.96	0.33 – 2.80
Village								
Village 1	1	1	1	1	1	1	1	1
Village 2	2.33	1.00 – 5.44	1.73	0.72 – 4.14	3.50	1.33 – 9.22	2.53	0.92 – 6.98
Village 3	1.03	0.57 – 1.88	0.98	0.51 – 1.91	1.86	0.87 – 3.95	2.98	1.36 – 6.50
Village 4	0.78	0.30 – 1.20	0.80	0.28 – 2.22	5.37	1.20 – 14.46	7.00	2.23 – 21.91

Significant estimates are displayed in **bold**; Abbreviations: OR = Odds Ratio

**Supplementary table – 2: Determinants of frailty defined by accumulation of deficits (FI)**

Associated factors	Crude Odds Ratio (n= 408)			Adjusted Odds Ratio (n= 408)		
	OR	95% CI	P value	OR	95% CI	P value
Age in 5 years interval	1.46	1.21 – 1.77	<0.001	<b>1.51</b>	<b>1.20 – 1.89</b>	<b>&lt;0.001</b>
Sex						
Male	1	1	<0.001	1	1	<0.001
Female	2.81	1.86 – 4.25		<b>3.66</b>	<b>1.84 – 7.29</b>	
Education status						
Educated	1	1	0.001	1	1	0.31
No formal education	2.30	1.44 – 3.69		1.33	0.77 – 2.30	
SES						
Richest	1	1	0.004	1	1	0.22
Middle income	1.22	0.76 – 1.97		1.32	0.76 – 2.29	
Poorest	2.37	1.41 – 3.98		1.89	0.92 – 3.90	
Living arrangement						
With Children	1	1	0.01	1	1	0.92
With Spouse	1.04	0.65 – 1.67		0.97	0.56 – 1.69	
Alone	2.63	1.38 – 4.99		1.13	0.52 – 2.48	
Routine work						
Strenuous/Moderate	1	1	<0.001	1	1	<b>0.006</b>
Some/Minimal	2.93	1.82 – 4.71		<b>2.11</b>	<b>1.24 – 3.62</b>	
Alcohol						
Never	1	1	0.01	1	1	0.29
Current/Past	0.57	0.37 – 0.87		1.46	0.73 – 2.93	
Village						
Village 1	1	1		1	1	
Village 2	1.16	0.56 – 2.40	0.1	0.811	0.37 – 1.80	0.30
Village 3	0.62	0.37 – 1.05		0.60	0.34 – 1.05	
Village 4	1.00	0.46 – 2.19		0.87	0.36 – 2.07	

Significant estimates are displayed in **bold**; Abbreviations: OR = Odds Ratio

**Supplementary table – 3: Factors associated with frailty defined by multi-domain definition (TFI)**

Associated factors	Crude Odds Ratio (n= 408)			Adjusted Odds Ratio (n= 408)		
	OR	95% CI	P value	OR	95% CI	P value
Age	1.48	1.23 – 1.79	<0.001	<b>1.61</b>	<b>1.27 – 2.04</b>	<b>&lt;0.001</b>
Sex						
Male	1	1	<0.001	1	1	<b>0.03</b>
Female	2.81	1.86 – 4.25		<b>2.10</b>	<b>1.08 – 4.09</b>	
Education status						
Educated	1	1	<0.001	1	1	<b>0.006</b>
No formal education	3.73	2.28 – 6.11		<b>2.18</b>	<b>1.24 – 3.81</b>	
SES						
Richest	1	1	0.004	1	1	0.09
Middle income	1.22	0.76 – 1.98		1.86	1.03 – 3.34	
Poorest	2.37	1.41 – 3.98		1.98	0.94 – 4.16	
Living arrangement						
With Children	1	1	0.01	1	1	0.07
With Spouse	1.04	0.65 – 1.67		1.49	0.85 – 2.63	
Alone	2.63	1.38 – 4.99		2.79	1.14 – 6.84	
Routine work						
Strenuous/Moderate	1	1	0.002	1	1	0.25
Some/Minimal	2.13	1.33 – 3.41		1.38	0.79 – 2.38	
BMI						
Normal	1	1	<0.001	1	1	<b>0.03</b>
Under weight	3.73	1.92 – 7.26		<b>2.89</b>	<b>1.38 – 6.03</b>	
Over weight	0.72	0.39 – 1.30		0.90	0.45 – 1.81	
Obese	1.03	0.62 – 1.71		1.31	0.72 – 2.40	
Alcohol						
Never	1	1	0.03	1	1	0.43
Current/Past	0.62	0.40 – 0.95		0.91	0.45 – 1.82	
Village						
Village 1	1	1	0.10	1	1	0.08
Village 2	1.16	0.56 – 2.39		1.75	0.82 – 3.73	
Village 3	0.62	0.37 – 1.05		1.92	1.07 – 3.44	
Village 4	0.10	0.46 – 2.19		2.64	1.14 – 6.10	

Significant estimates are displayed in **bold**; Abbreviations: OR = Odds Ratio



