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Can the International Classification of Functioning, Disability and Health (ICF) be used as a framework to explain falls in older Australian women?

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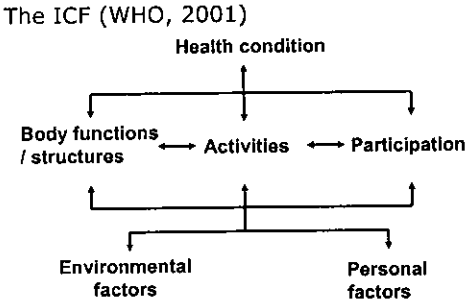
Background

- Falls and fall injury among older people continues to be an important health problem
- Risk factors are complex
- Holistic approaches to address falls risk are needed.
- The ICF is an internationally accepted coding system – can it be applied to falls risk?
- One study has mapped the ICF to falls in people with stroke (Beninato, Portney & Sullivan, 2009)

Background

- The ICF (WHO, 2001)



Background

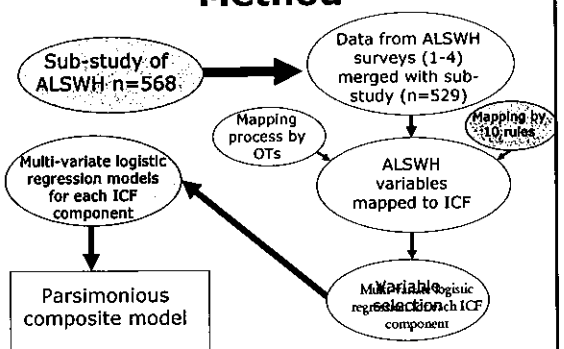
- Data from the older cohort of Australian Longitudinal Study of Women's Health (Women's Health Australia) were used.
- Participants were randomly selected from the database of the Health Insurance Commission across Australia.
  - Survey 1 1996 (12,432) aged 70-75
  - Survey 2 1999 (10,433) aged 73-78
  - Survey 3 2002 (8,647) aged 76-81
  - Sub-study 2004 (568) aged 78-83
  - Survey 4 2005 (6,911) aged 79-84
- Surveys covered socio-demographic, physical, psychological and behavioural aspects of health consistent with the domains of the ICF

Variable categories	S1	S2	S3	Sub-study	S4
SF36	*	*	*		*
Using health services	*	*	*		*
Coping with problems	*	*	*		*
Healthy weight and shape	*				
Juggling time	*				
Family and friends	*	*	*		*
Personal information	*				
Healthy lifestyle		*	*		*
You and your life		*			
Giving and getting help		*			
Managing day by day			*		*
Home and neighbour			*		*
Health in the past/daily life					*
Home environment				*	
Fear of falls and ADL				*	

Aims of the project

- To evaluate the application of the ICF as a theoretical framework to understand falls risk
- To empirically test the capacity of the ICF to identify falls risk factors for older women using the Australian Longitudinal study of Women's Health (ALSWH) cohort dataset.

Method



Results: sample characteristics

- Mean age 79.7 years
- 42% married and 48% widowed
- 52% live alone
- 61% live in a rural or remote area
- 73% live in a house, 17% in a flat/apartment and 9% in a retirement village
- 37% live in NSW, 23% in Victoria, 18% in Queensland, 9% in SA and 8% in WA
- 20% (n=103) reported a fall in the previous six months, and 67 reported an injury related to the fall

Results of the mapping process

- Out of 410 items, OTs only disagreed on the mapping of 7 (1.5%) to the ICF
- Differences related to interpretation of activity vs participation
- OTs agreed on the mapping of the SF36 but ratings did not match the 10 rules (Cieza, 2005).
- Mapping using the 10 rules differed due to personal factors not being classified and activity and participation being classified together.

Results – Final body function sub-model (n=463, p=0.0001)

Variable	OR (95% C.I)
Often sad & lonely	2.72 (1.24-5.46)
Ever had breathing difficulty	1.89 (1.15-3.11)
Visual problems	1.87 (1.07-3.26)
Arthritis/pain/fatigue medication	2.03 (0.75-5.45)
Hearing difficulty	1.78 (0.95-3.31)
Chronic disease/digestion medication	1.60 (0.93-2.74)
High blood pressure medication	1.46 (0.88-2.39)
Difference in role emotional score	0.99 (0.98-1.0)

Results – Final Activity and Participation sub-model (N=506, *p*=0.005)

Variable	OR (95% C.I)
Lambeth Disability Score	1.12 (1.06-1.20)
Break up of a close relationship	2.45 (0.77-7.81)
Gets around unaided	1.53 (0.74-3.16)
Hearing interferes with social activity	1.54 (0.97-2.47)
Attends classes	0.70 (0.37-1.31)

Results – Final Environment sub-model (N=476, p=0.002)

Variable	OR (95% C.I)
Needs help for daily tasks	2.04 (1.19-3.48)
HOME FAST score	1.07 (0.99-1.16)
Family problems	1.59 (0.89-2.83)
Public transport availability	0.53 (0.24-1.16)
Income from business	0.48 (0.17-1.34)
Need help for odd jobs	0.94 (0.48-1.81)

Results – Final model for personal sub-model (N=469, p=0.12)

Variable	OR (95% C.I)
Income management	0.61 (0.36-1.04)
Makes decisions about own life	0.52 (0.2-1.36)
Education	0.65 (0.39-1.07)
Life orientation test	0.95 (0.89-1.02)

Results – Final Health Conditions sub-model (N=513, p=0.004)

Variable	OR (95% C.I)
Depression	2.83 (1.17-6.83)
Knee surgery	2.46 (1.09-5.56)
Low iron level	2.29 (1.28-4.09)
Cataract	1.97 (1.21-3.21)
Diabetes	0.47 (0.18-1.20)
Heart disease	2.13 (0.92-4.95)
Hypertension	1.46 (0.91-2.36)
Bronchitis	2.08 (0.84-5.1)

Results – Final "not covered" and "general health" sub-models

Variable	OR (95% C.I)
"Not covered" sub model	
Decline/death of spouse	1.54 (0.90-2.62)
Decline/death of family or friend	1.54 (1.0-2.39)
"General health" sub-model	
Major illness/injury in last 3 years	2.15 (1.12-4.11)
Most time spent in chair/bed because of ill health	1.98 (1.23-3.19)
Times to visit GP last year (>8)	2.15 (0.81-5.7)
Teeth/swallowing problems interfere with eating	2.02 (0.87-4.69)

Results – final parsimonious model of factors predictive of falls using the ICF

Variable	OR (95% C.I)
Health conditions	
Diabetes	0.14 (0.04-0.55)
Low iron level	2.00 (1.03-3.91)
Cataract	2.06 (1.19-3.55)
Body function	
High blood pressure medication	1.71 (1.01-2.88)
Environment	
HOME FAST score	1.11 (1.02-1.20)
General health	
Major illness/injury in last three years	2.91 (1.45-5.84)
Most time spent in chair/bed because of ill health	1.99 (1.14-3.49)
Activity and Participation	
Lambeth Disability score	1.09 (1.01-1.17)

Implications

- A variety of falls risk factors contributed to the final model across the ICF components
- 6 out of 8 risk factors were medically focused
- The home environment and functioning in daily activities remained significant risk factors
- Population level falls prevention programs should incorporate these risk factors
- Home environmental and ADL related interventions may be useful in lower risk populations

Limitations

- The health risk factors were self-reported by participants using surveys.
- Outcome of falls also self-reported
- Missing data may have reduced the power to detect associations for some potential risk factors
- Linking rules for the ICF required consensus to be applied reliably
- No classification for Personal Factors in the ICF
- Whilst falls are classified in the ICD10 definitions, they are not classifiable in the ICF
- Original data collection tools used in the ALSWH were not designed according to the ICF definitions
- Men were not included in the study

Conclusions

- A biopsychosocial model such as the ICF can be used to predict falls at a population level of community dwelling women
- Results suggest that a broad, holistic approach to falls risk factors is justified that includes the home environment and ADL functioning
- OTs are key contributors to falls prevention using an international, multi-disciplinary framework
- Results underpin the importance of a multi-disciplinary approach to falls prevention
- The ICF needs to be revised and extended to include definitions of personal factors, codes specific to the home environment and the interpretation of activity and participation.

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