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International falls prevention evidence: Gaps and translation issues

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Thanks Hobart! (and Michelle and team)



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BMC Geriatrics

RESEARCH ARTICLE

Open Access



What works in falls prevention in Asia: a systematic review and meta-analysis of randomized controlled trials

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Abstract

Background: There is strong research evidence for falls prevention among older people in the community setting, although most is from Western countries. Differences between countries (eg sunlight exposure, diet, environment, exercise preferences) may influence the success of implementing falls prevention approaches in Asian countries that have been shown to be effective elsewhere in the world. The aim of this review is to evaluate the scope and effectiveness of falls prevention randomized controlled trials (RCTs) from the Asian region.

Method: RCTs investigating falls prevention interventions conducted in Asian countries from (i) the most recent (2012) Cochrane community setting falls prevention review, and (ii) subsequent published RCTs meeting the same criteria were identified, classified and grouped according to the ProFANE intervention classification. Characteristics of included trials were extracted from both the Cochrane review and original publications. Where ≥ 2 studies investigated an intervention type in the Asian region, a meta-analysis was performed.

Results: Fifteen of 159 RCTs in the Cochrane review were conducted in the Asian region (9%), and a further 11 recent RCTs conducted in Asia were identified (total 26 Asian studies: median 160 participants, mean age:75.1, female:71.9%). Exercise (15 RCTs) and home assessment/modification ($n = 2$) were the only single interventions with ≥ 2 RCTs. Intervention types with ≥ 1 effective RCT in reducing fall outcomes were exercise (6 effective), home modification (1 effective), and medication (vitamin D) (1 effective). One multiple and one multifactorial intervention also had positive falls outcomes. Meta-analysis of exercise interventions identified significant benefit (number of fallers: Odds Ratio 0.43 [0.34,0.53]; number of falls: 0.35 [0.21,0.57]; and number of fallers injured: 0.50 [0.35,0.71]); but multifactorial interventions did not reach significance (number of fallers OR = 0.57 [0.23,1.44]).

Conclusion: There is a small but growing research base of falls prevention RCTs from Asian countries, with exercise approaches being most researched and effective. For other interventions shown to be effective elsewhere, consideration of local issues is required to ensure that research and programs implemented in these countries are effective, and relevant to the local context, people, and health system. There is also a need for further high quality, appropriately powered falls prevention trials in Asian countries.

Keywords: Falls prevention, Effectiveness, Asia, Elderly, Community

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Cochrane Database of Systematic Reviews

Interventions for preventing falls in older people in care facilities and hospitals (Review)

Cameron ID, Dyer SM, Panagoda CE, Murray GR, Hill KD, Cumming RG, Kerse N

Cameron ID, Dyer SM, Panagoda CE, Murray GR, Hill KD, Cumming RG, Kerse N.
Interventions for preventing falls in older people in care facilities and hospitals.
Cochrane Database of Systematic Reviews 2018, Issue 9. Art. No.: CD005465.
DOI: 10.1002/14651858.CD005465.pub4.

www.cochranelibrary.com

Interventions for preventing falls in older people in care facilities and hospitals (Review)
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WILEY

Where are we at in falls prevention research?



Don't we have enough falls prevention RCTs???

Do we need more trials???

Falls prevention internationally

- ▶ Interpretation of the falls prevention literature usually does not consider where the research was undertaken
- ▶ Meta-analyses – rarely sub-analysed by regions
- ▶ Are there factors that might influence falls prevention outcomes in different parts of the world?



Possible factors influencing translation of outcomes between Asian and non-Asian RCTs (community setting)

► Environment:

- Family living arrangements
- Indoor and outdoor environments
- Footwear



► Lifestyle:

- Diet
- Sunlight exposure
- Types and amounts of physical activity



► Health service and systems:

- Focus on preventive health care
- Costs

► Knowledge, attitudes and beliefs about falls

- Concerns reporting falls



► Other



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Yardley et al., 2005; Kwan et al, 2011

Relevance of international falls prevention studies in Australia

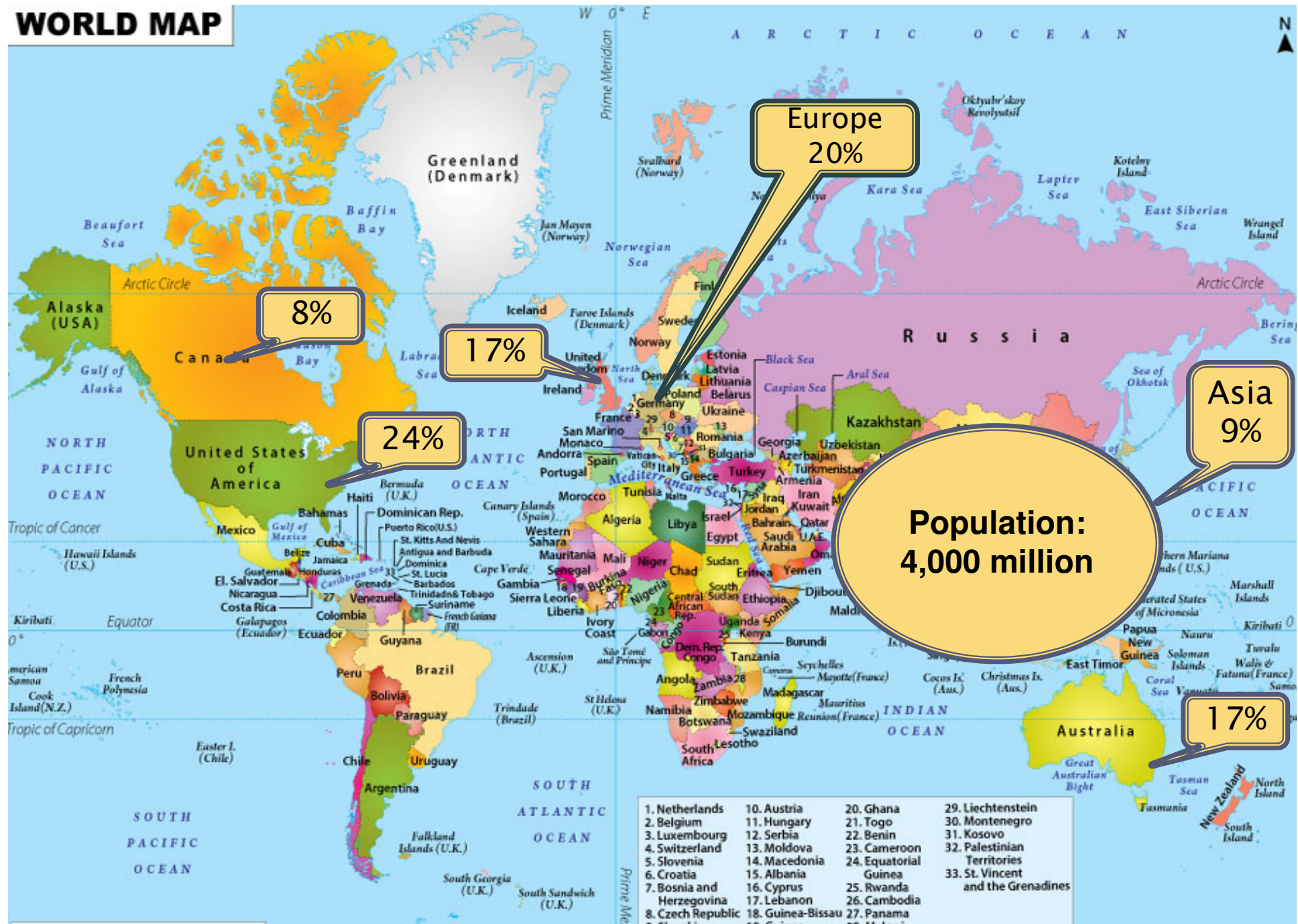
- ▶ In 2016, 1 in 3 people aged over 65 in Australia were born overseas, the majority in non-English speaking countries

(Older Australia at a Glance 2018)

- ▶ Need for greater consideration of cultural factors in falls prevention initiatives
- ▶ Australian falls prevention research often excludes non-English speaking participants



WORLD MAP



COCHRANE REVIEW: Gillespie et al, 2012 (159 trials with 79,193 participants); *Hill et al, 2018 BMC Geriatrics

Meta-analysis: Summary of included Asian randomised trials

- 26 randomised trials (11 since 2012 review)
- Average age of participants was 75.1 years
- On average 71.9% female (five studies had female only samples)
- Most researched areas* – exercise (n=15), multiple (n=5), multifactorial (n=4)
- Countries where trials were conducted: Japan (12), Taiwan (8), Thailand (2), China/Hong Kong (2), Malaysia (1), Singapore (1)

Hill et al, 2018, BMC Geriatrics: 18:3, DOI 10.1186/s12877-017-0683-1



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* Several studies had 2 interventions being compared within a single study

What RCTs have been undertaken where?

	Asia		Rest of world [#]
	Cochrane (pre2012)	After 2012*	Cochrane (pre 2012)
<i>Single Interventions</i>			
S1. Exercise	8 Japan 5 China 1 Taiwan 2*	7 Japan 5 Taiwan 1 Malaysia 1	52
S2. Medication (incl vit D)	Japan 1	0	25
S3. Surgery	0	0	5
S4. Fluid or nutrition therapy	0	0	3
S5. Psychological interventions	Taiwan 1*	0	1
S6. Environmental / assistive technology	Taiwan 1	Japan 1	12
S7. Interventions to increase knowledge	Taiwan 1*	0	4
<i>Multiple interventions</i>	3 Taiwan 2 Thailand 1	2 Taiwan 1 Singapore 1	15
<i>Multi-factorial interventions</i>	4 Taiwan 3 Thailand 1	0	35

* Includes studies with two active interventions investigated (coded in different intervention category)

[#] Excludes studies undertaken in Asia



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COCHRANE REVIEW: Gillespie et al, 2012 (159 trials with 79,193 participants); *Hill et al, 2018 BMC Geriatrics

What has been shown to be effective in Asian RCTs?

Effective – Exercise

Author	Exercise type	Dosage	Meets criteria*
Woo 2007 (Hong Kong)	Tai Chi (Yang style) <input checked="" type="checkbox"/> vs Theraband <input checked="" type="checkbox"/>	3 x / wk x 52 wks	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/> Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>
Iwamoto 2009 (Japan)	Centre based and home based (calisthenics, balance, power & walking)	30 mins 3x/ wk x 20 wks (centre) + 4 x / wk (home based)	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>
Kamide 2009 (Japan)	Home exercise (balance, strength, impact, flexibility)	3x/wk x 24 weeks. No HV	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>
Shigematsu 2008 (Japan)	Group exercise (square stepping exercise)	2 x / wk x 12 weeks	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>
Suzuki 2004 (Japan)	Combined group + home exercise (strength, balance, Tai Chi, walking)	Group 10 x 1 hour x 6 months; Home program 30 minutes 3x / week	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>
Yamada 2010 (Japan)	Group exercise (multi-component trail walking program)	1 hour 1 x / wk x 16 weeks	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>
Lin 2007 (Taiwan)	Home exercise (individualised) – strength, balance and flexibility	3 x/wk x 16 weeks +HV supervision each 2 weeks	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>
Huang 2010 (Taiwan)	Tai Chi Chuan	3 x / wk x 20 weeks	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>
Yamada 2012 (Japan)	Group (Balance, strength, Cardio)	45 mins 1 x / week x 24 weeks	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>
Yamada 2013 (Japan)	Group multi-task stepping activity (both groups also did balance, strength, cardio)	30 mins 2 x / week x 24 weeks	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>
Ohtake 2013 (Japan)	Group (balance, strength and flexibility) + home program	Group 20–30 mins 1 x / wk + Home 1–2 x / wk x 8 weeks	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>
Kim 2014 (Japan)	Group (strength and balance)	1 hour 2 x / wk x 12 weeks, then 1 x monthly group x 9 months	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>
Hirase 2015 (Japan)	Group (1) foam balance exercises vs (2) stable surface balance exercises	60 minutes 1 x / wk (group) + daily home exercise x 16 weeks	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>
Ashari 2016 (Malaysia)	Home exercise (individualised) – strength, balance, TURNING, and flexibility	20–30 mins 4 x / wk x 16 weeks	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>
Hwang 2016 (Taiwan)	Group + Home based (1) Tai Chi Chuan <input checked="" type="checkbox"/> (2) Individualised balance, strength and flexibility <input checked="" type="checkbox"/>	Both interventions: Group/supervised 1 hour 1 x / wk x 6 months+ self practice daily	Bal <input checked="" type="checkbox"/> Dose <input checked="" type="checkbox"/>

Exercise and falls prevention: what we know...

54 RCTs (all settings, though most in community)

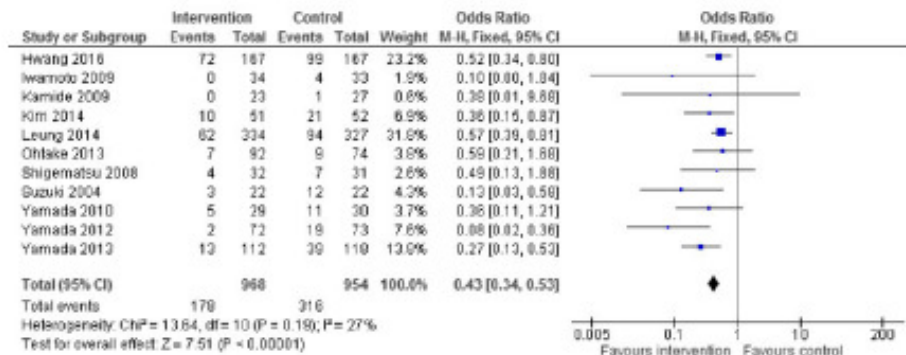
Component	Reduction in falls in studies with this component			Reduction in falls in studies without this component			Variability explained (%)
	Reduction %	95% CI	Studies <i>n</i>	Reduction %	95% CI	Studies <i>n</i>	
Exercise that aims to provide a moderate or high challenge to balance	22	14–30	43	0	0–14	17	15
Exercise that aims to provide a high challenge to balance	25	15–34	30	6	0–17	30	16
Total exercise dose more than 50 hours	23	13–32	30	7	0–8	30	19
Inclusion of walking training	10	0–22	30	23	11–32	30	8
A high risk study population	10	0–20	39	27	14–37	21	15

CI = confidence interval.

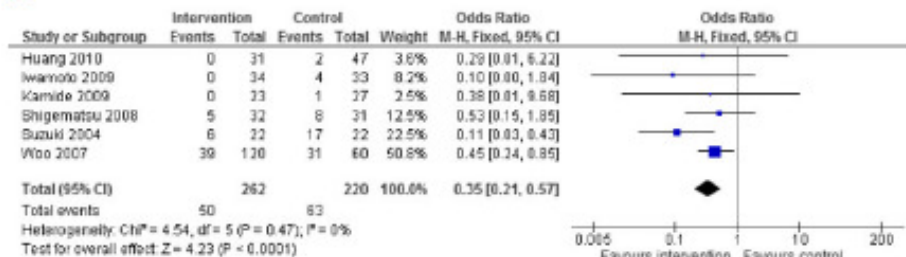


Meta-analysis

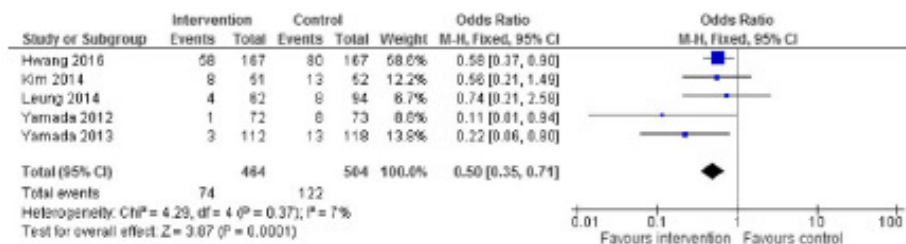
a EXERCISE – number of fallers



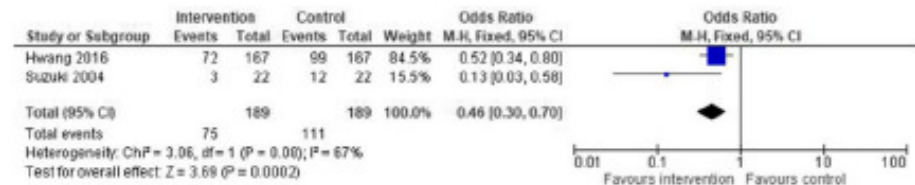
b EXERCISE – number of falls



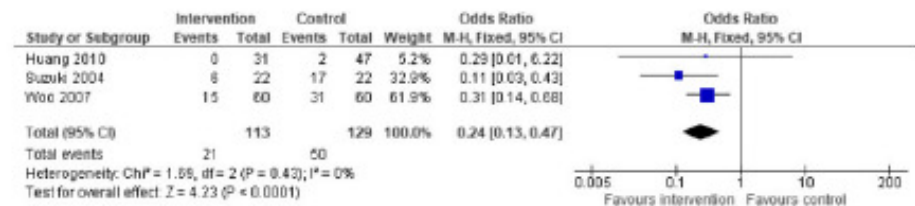
c EXERCISE – number of fallers injured



d TAI CHI – number of fallers



e TAI CHI – number of falls



f MULTIFACTORIAL – number of fallers

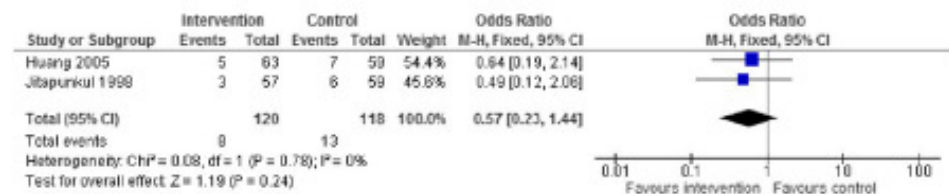


Fig. 2 Meta-analyses of intervention types that included two or more interventions from the Asian region. **a.** Number of fallers – Exercise, **b.** Number of falls – Exercise, **c.** Number of fallers injured - exercise, **d.** Number of fallers – exercise using Tai Chi, **e.** Number of falls – exercise using Tai Chi, **f.** Number of fallers – Multifactorial Interventions

What has been shown to be effective in Asian RCTs? – Multiple intervention

 Effective

Multiple intervention	Effective / Not Effective
Huang 2010 (Taiwan)	Education program + Tai Chi program
Huang 2011 (Taiwan)	Cognitive Behaviour Therapy + Tai Chi program
Assantachai 2002 (Thailand)	Educational leaflet + access to free geriatric clinic
Lee 2013 (Taiwan)	Health education + exercise (group balance / strength ..)
Ng 2015 (Singapore)	Nutrition supplementation + exercise + cognitive training

Multiple = two or more interventions applied to all participants



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What has been shown to be effective in Asian RCTs? – Multifactorial intervention

 Effective

Multifactorial intervention	Effective / Not Effective
Shyu 2010 (Taiwan)	Hip fracture pts (multidisciplinary in-pt and discharge planning + OP)
Jitapunkul 1998 (Thailand)	Non-professional HV + screen + referral if RF identified
Huang 2004 (Taiwan)	Home visits x 3 – Risk assessment + support for interventions
Huang 2005 (Taiwan)	Hip fracture pt: enhanced discharge planning – Ns directed multifactorial intervention

Multifactorial = variable interventions applied to participants
dependent on risk profile



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Hill KD et al, BMC Geriatrics, 2018

Trends in falls prevention research in Asia

- ▶ Generally larger sample sizes
 - 2012 to current: median sample size 196
 - in 2012 Cochrane review, median n=150
- ▶ Majority of Asian RCTs from well developed parts of Asia (most from Japan and Taiwan) – 20/26
- ▶ Main focus exercise (15), multiple (5) and multifactorial (4) interventions
- ▶ Many types of single interventions with no RCTs in Asia



Where to from here: Falls prevention in Asia



- ▶ Implement where RCT evidence from Asian samples
- ▶ Consider implementation of effective interventions from non-Asian studies
 - In context of local factors (culturally appropriate interventions)
 - With modifications to accommodate local factors if required
- ▶ **Undertake strategic research to build evidence base in Asian samples**



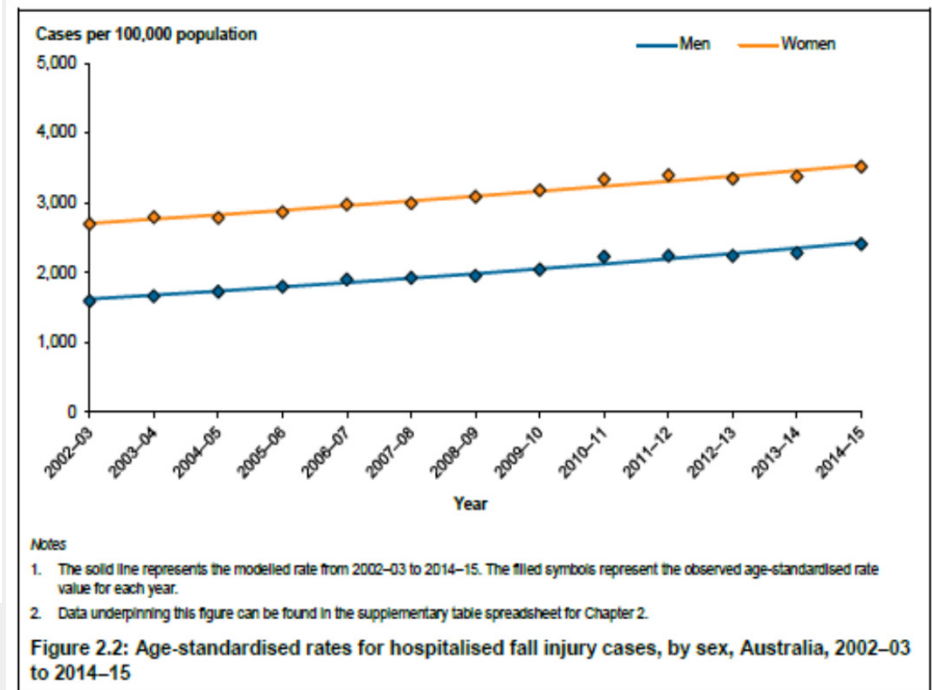
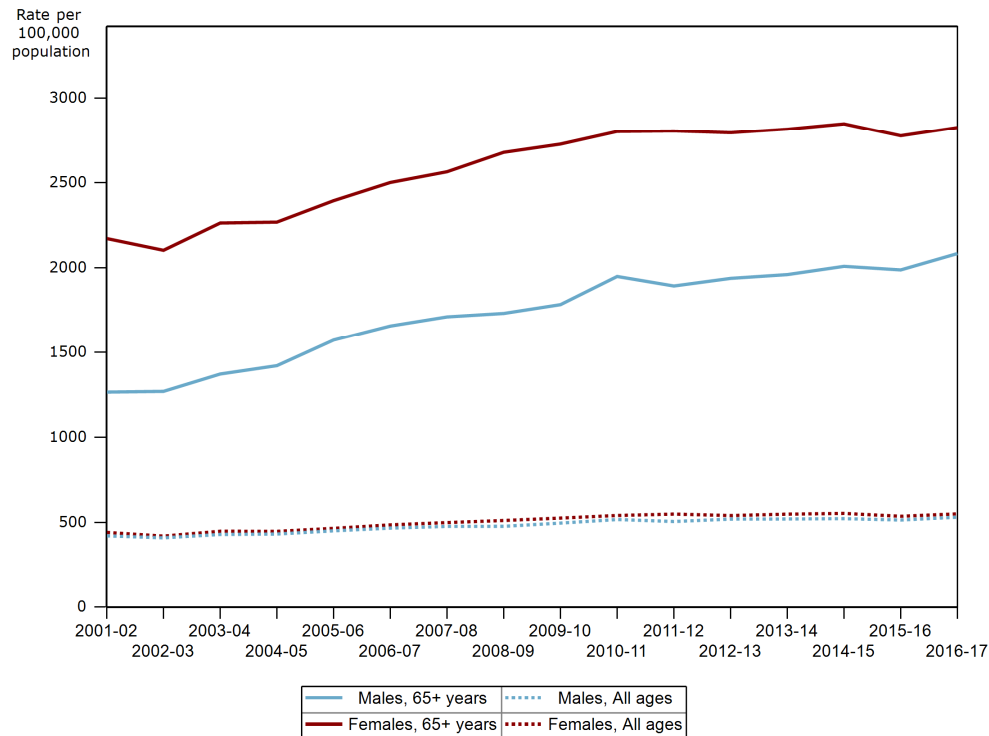
What about residential aged care?



Hospital admissions for falls (**all settings**): changes over time (NSW / Australia)

**The rate of hospitalised falls for - men increased by 3.4% per year,
- women increased by 2.3% per year**

Fall-related injury hospitalisations, persons of all ages and 65 and over,
Hospital stay: Overnight stay, NSW 2001-02 to 2016-17



Above: HealthStats NSW

http://www.healthstats.nsw.gov.au/Indicator/inj_falloldhos/inj_falloldhos

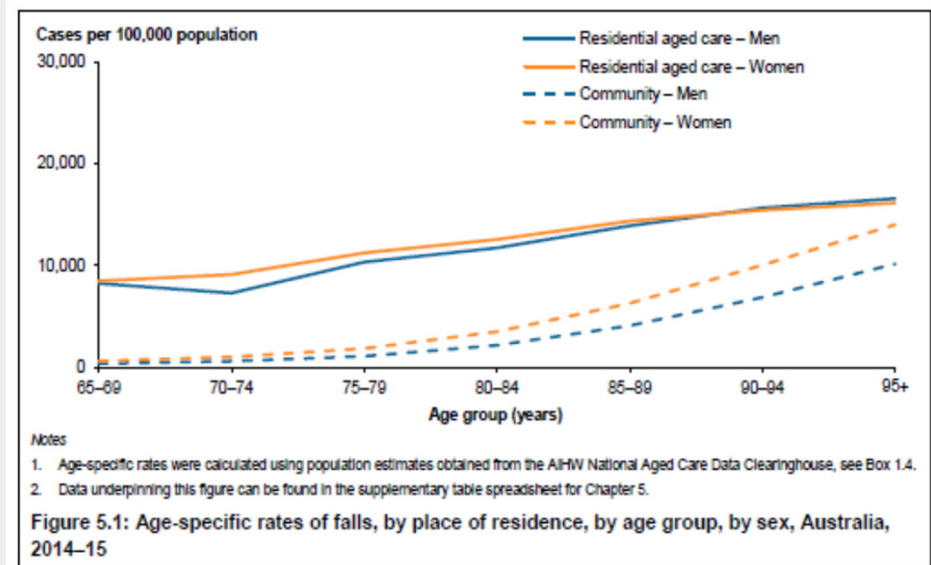
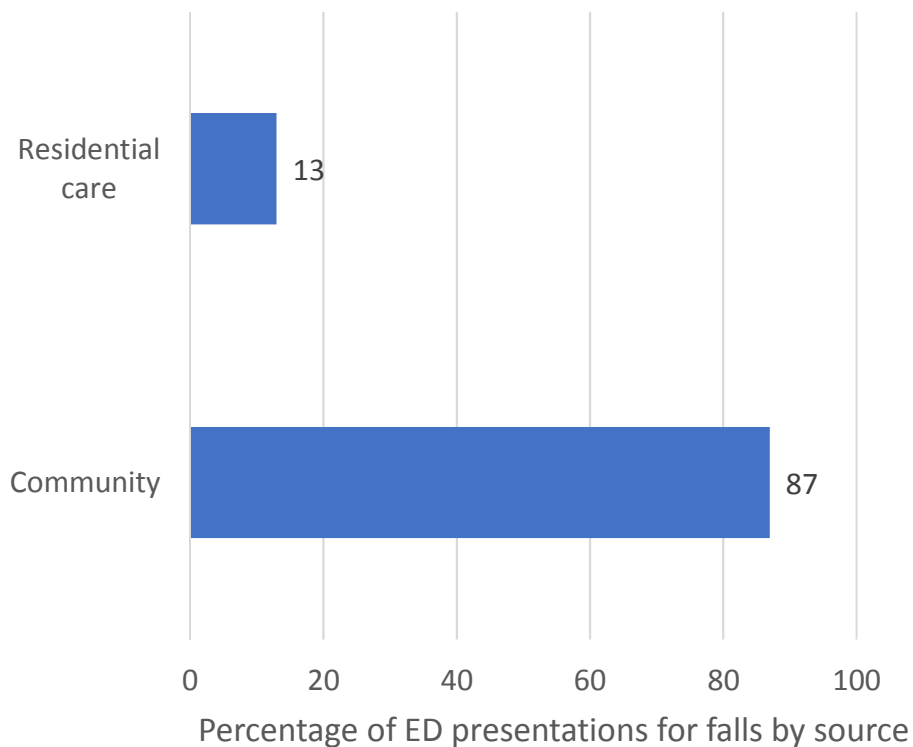
Right: AIHW 2018 Pointer S.



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Hospital admission sources for falls: importance of residential care

- 1 in every 10 days spent in hospital by a person aged 65 and over in 2014–15 was attributable to an injurious fall
- Days of patient care attributable to fall-related injury increased from 0.8 million patient days in 2002–03 to 1.4 million patient days in 2014–15



Above: Close J 2012 – Emergency Med J – p 742-7

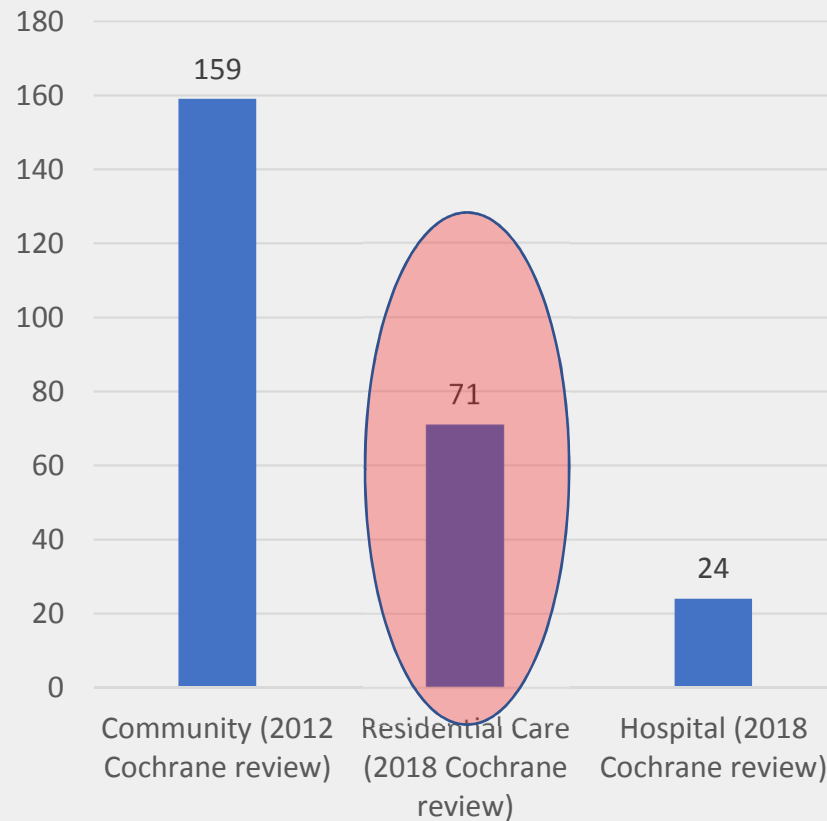
Right: AIHW 2018 Pointer – Trends in hospitalised injury due to falls in older people, 2002–03 to 2014–15.



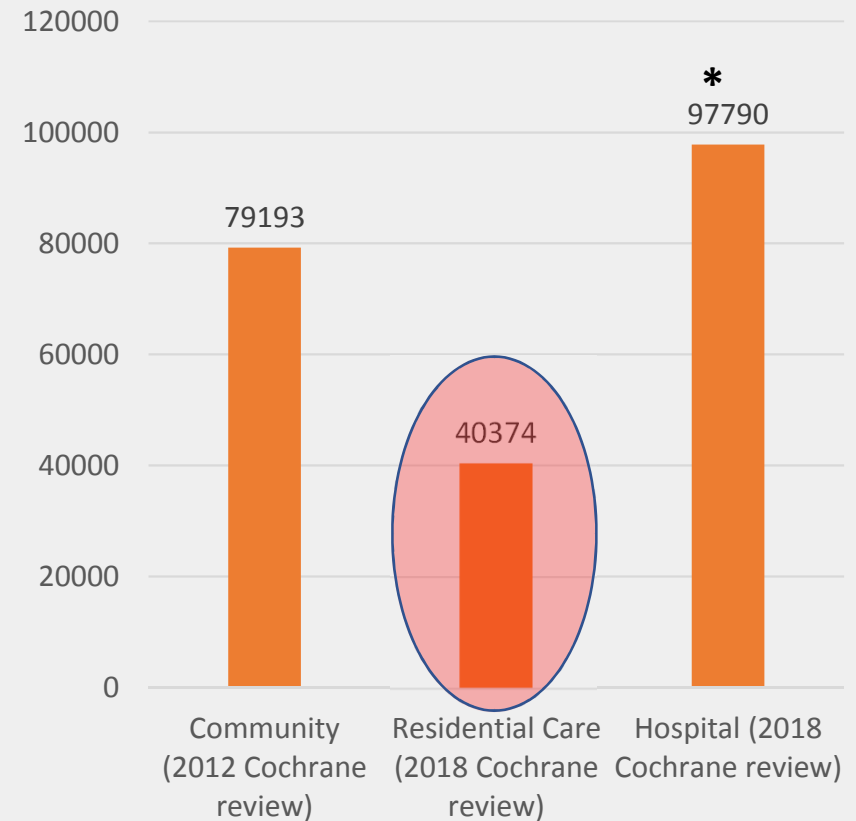
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Where is the evidence?

Number of randomised trials included



Total number of participants in RCTs



A gap: Residential care

- Update on 2012 Cochrane review
- Reports Residential care and Hospitals (latter not included in this presentation)
- Since 2012 in residential care:
 - 28 new randomised controlled trials
- In total, 71 studies in residential care
 - 54 trials tested the effect of an intervention only
 - three trials tested the effect of multiple interventions
 - one trial tested the effect of an intervention only, and 13 trials tested a comparison.

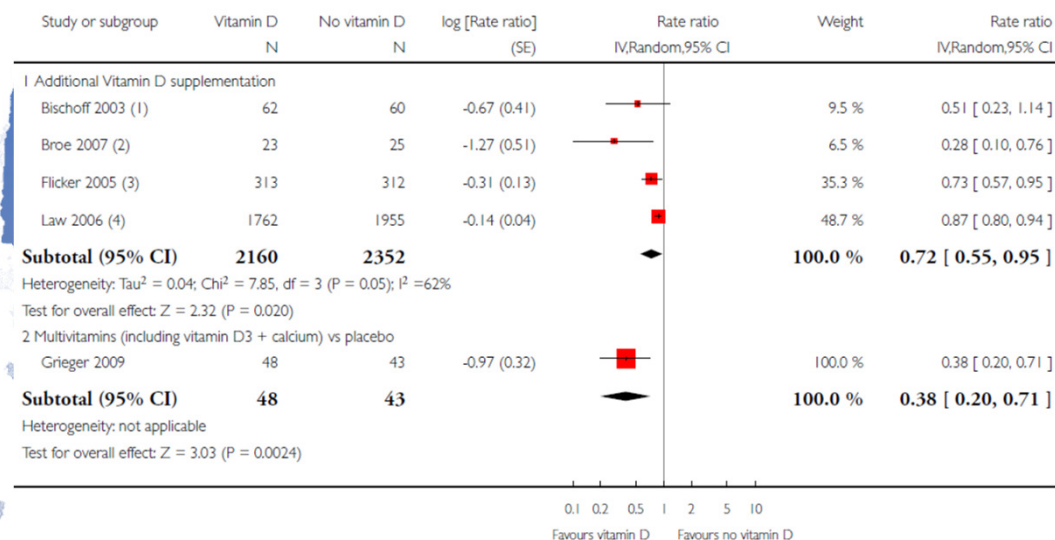
2018: Quality of the evidence
"The majority of trials were at high risk of bias, mostly relating to lack of blinding. With few exceptions, the quality of evidence for individual interventions in either setting was generally rated as low or very low."

Vitamin D interventions in residential care: rate of falls

- Overall **significant effect**
RR=0.38 (0.20-0.71)

Analysis 6.1. Comparison 6 Care facilities: Vitamin D supplementation vs no vitamin D supplementation, Outcome 1 Rate of falls.

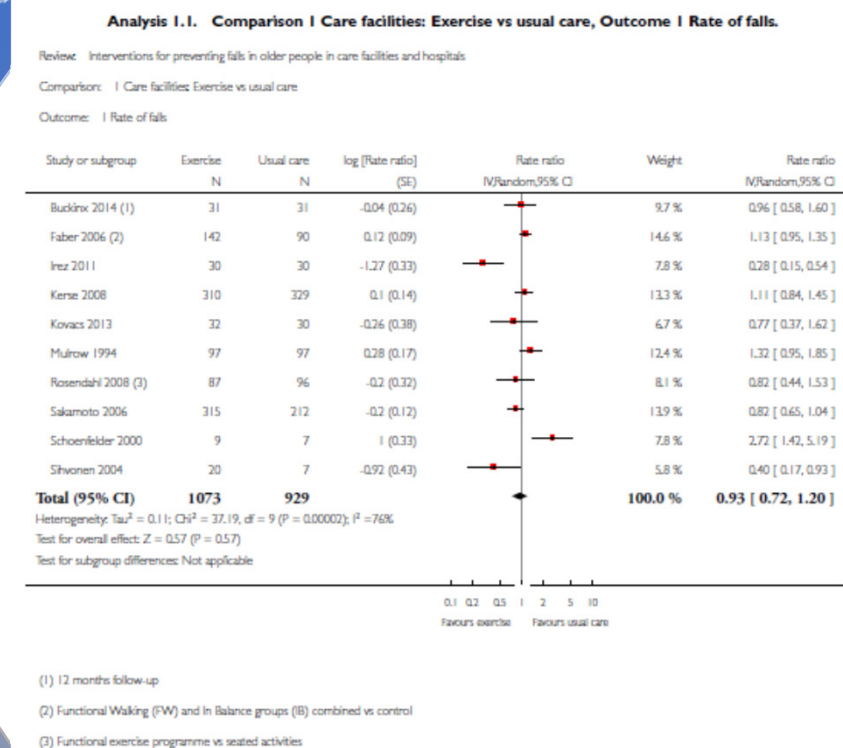
Review: Interventions for preventing falls in older people in care facilities and hospitals
Comparison: 6 Care facilities: Vitamin D supplementation vs no vitamin D supplementation
Outcome: 1 Rate of falls



- No effect for number of fallers - RR=1.03 (0.90-1.18)

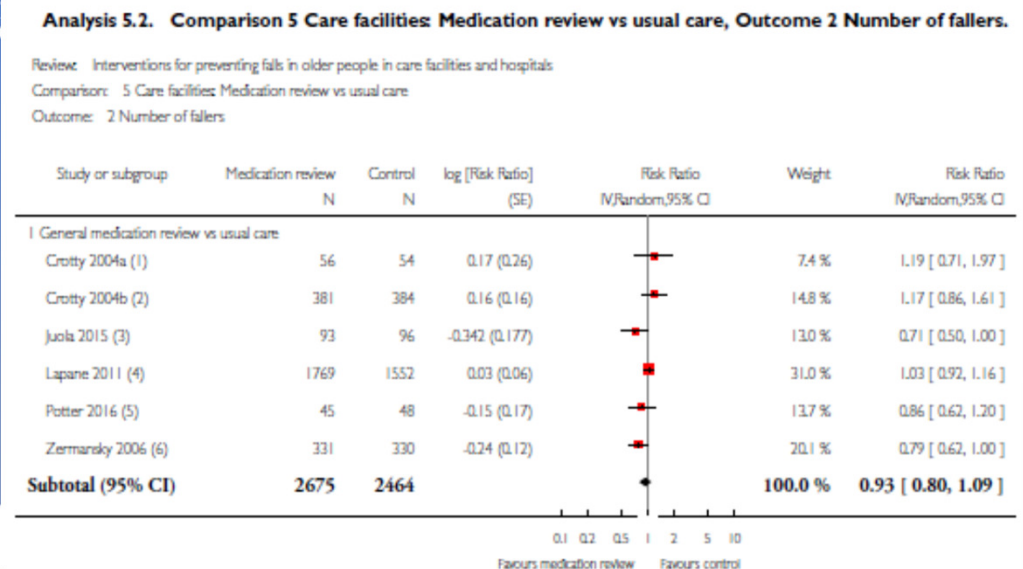
Exercise interventions in residential care: rate of falls

- Overall **no effect**
RR=0.93 (0.72-1.20)
- Average intervention sample size: 107.3; without 2 large studies, ave=61
- Diverse mix of interventions and sample profile
- ??small effect when some similar interventions grouped
- Similar outcome for number of fallers



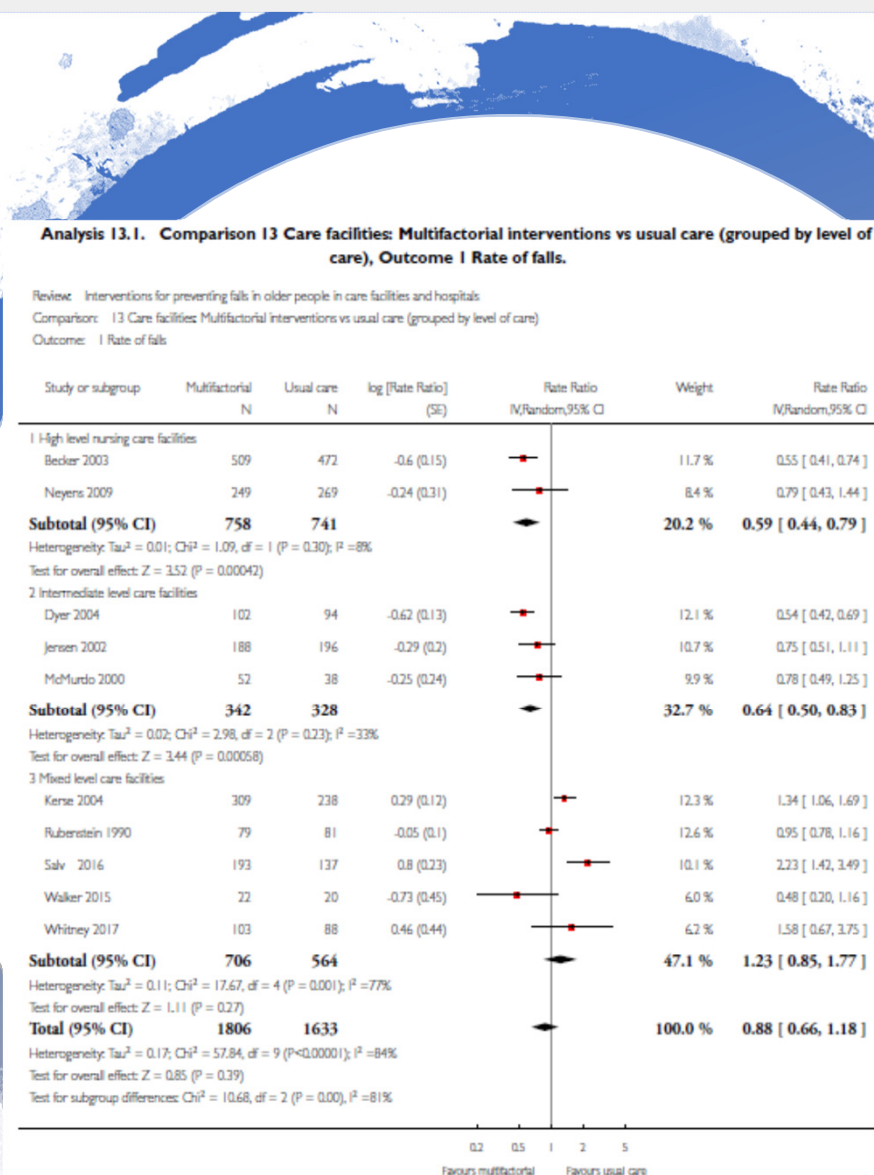
Medication review interventions in residential care: number of fallers

- Overall **no effect**
RR=0.93 (0.80-1.09)
- Different approaches including:
 - medication review / deprescribing
 - Physician education on drug use in older people / nurse education on reducing medication use
 - Targeting of specific medications for deprescribing (psychoactive medications / antidepressants)
- Similar outcome for rate of falls - RR=0.93 (0.64-1.35)



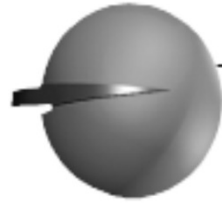
Multifactorial interventions in residential care: rate of falls

- Overall **no effect**
RR=0.88 (0.66-1.18)
- Significant reduction in rate of falls for:
 - High level care
 - Intermediate level care
- No effect for mixed level care
- Diverse mix of interventions and sample profile
- Similar outcome for number of fallers



In summary

- High risk population
- Limited evidence of effective interventions
 - Vitamin D supplementation for residents with low vitamin D
 - Multifactorial interventions (sub analysis by level of care)
 - ??some exercise interventions
- Low quality / small sample sizes
- Limited focus of new research



Contrasting results

Evidence Review

Exercise Interventions for Prevention of Falls Among Older People in the Community: A Systematic Review and Meta-Analysis

Seon Heui Lee, PhD, PT

ABSTRACT

Keywords
systematic review,
meta-analysis,
falls, exercise

Background

- ▶ 21 studies included in Lee 2017 were excluded from the Cochrane review because they did not meet criteria for inclusion.
- ▶ 15 studies included in Lee 2017 were excluded from the Cochrane review because they did not meet criteria for inclusion.
- ▶ Meta-analysis of trials of exercise as a single intervention in Lee 2017 found no difference in the rate of falls or risk of falling, consistent with the Cochrane review findings.
- Exercise combined with other fall interventions (i.e., medication review, risk (i.e., medication review, CI 0.68–0.97)
- Effect of exercise combined with other fall interventions on the rate of falls (RR 0.61, 95% CI 0.52–0.72)
- Exercise combined with balance training (i.e., gait, balance, and functional training; or balance and strength) resulted in a reduction in the rate of falls. Sensitivity analyses indicated that exercise interventions resulted in reduced numbers of fallers (RR 0.71, 95% CI 0.53–0.97).



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Observational study across 9 residential care facilities in Perth and Melbourne

- ▶ Of the 34 programs conducted across the nine facilities, 14 (41%) involved seated exercises only.
- ▶ Twenty programs involved standing exercises and underwent observation.
- ▶ Only 10% of observed programs met all three recommendations for an effective falls prevention exercise program, with 60% providing moderate to high challenge to balance, and 10% providing adequate dosage.



Progressive Resistance and Balance Training for Falls Prevention in Long-Term Residential Aged Care: A Cluster Randomized Trial of the Sunbeam Program

(Australian study)

- ▶ Cluster randomized controlled trial of 16 residential aged care facilities (n=221)
- ▶ Sample: broad inclusion criteria (excluded: terminal illness, immobile, moderate-severe cognitive impairment ($\text{MMSE} \leq 15$))
- ▶ Individually prescribed progressive resistance (strength) and balance exercise
- ▶ Group sessions, 50 hours x 25 weeks, then 6 month maintenance period
- ▶ 55% reduction in rate of falls in the exercise group, and improved physical performance.
- ▶ No serious adverse events

See session 8b this afternoon



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Current trials (1)

Heaven et al. *Trials* 2014, **15**:47
<http://www.trialsjournal.com/content/15/1/47>



STUDY PROTOCOL

Open Access

Pilot trial of Stop Delirium! (PiTStop) - a complex intervention to prevent delirium in care homes for older people: study protocol for a cluster randomised controlled trial

Anne Heaven¹, Francine Cheater², Andrew Clegg³, Michelle Collinson⁴, Amanda Farrin⁴, Anne Forster³, Mary Godfrey³, Liz Graham⁴, Anne Grice¹, Rachel Holt⁵, Claire Hulme³, Emie Lloyd¹, David Meads³, Chris North¹, John Young³ and Najma Siddiqi^{1,6*}

Abstract

Background: Delirium (or acute confusion) is a serious illness common in older people, in which a person's thinking and perceptions may be affected. Reducing delirium is important because of the considerable distress it causes, and the poor outcomes associated with it, such as increased admissions to hospital, falls, mortality and costs to the National Health Service (NHS). Preventing delirium is possible using multicomponent interventions; successful interventions in hospitals have reduced it by one-third. However, there is little research to guide practice in care homes, where it is common because of the clustering of known risk factors (older age, frailty, and dementia). In previous work we developed a multicomponent intervention to prevent delirium in care homes, called Stop Delirium! The intervention was based upon evidence from the research literature relating to the prevention of delirium and on strategies to change professional practice. Before starting a large costly trial of Stop Delirium!, this pilot study will test and help improve the

Current trials (2)

Sluggett et al. *Trials* (2018) 19:37
DOI 10.1186/s13063-017-2417-2

Trials

STUDY PROTOCOL

Open Access



Simplification of Medications Prescribed to Long-term care Residents (SIMPLER): study protocol for a cluster randomised controlled trial

Janet K. Sluggett^{1,2*}, Esa Y. H. Chen^{1,2}, Jenni Ilomäki^{1,3}, Megan Corlis^{2,4}, Sarah N. Hilmer^{2,5}, Jan Van Ermden^{2,4}, Choon Ean Ooi^{1,2}, Kim-Huong Nguyen^{2,6}, Tracy Comans^{2,6,7}, Michelle Hogan^{2,4}, Tessa Caporale⁴, Susan Edwards⁸, Lyntara Quirke⁹, Allan Patching¹⁰ and J. Simon Bell^{1,2,3,11}

Abstract

Background: Complex medication regimens are highly prevalent in residential aged care facilities (RACFs). Strategies to reduce unnecessary complexity may be valuable because complex medication regimens can be burdensome for residents and are costly in terms of nursing time. The aim of this study is to investigate application of a structured process to simplify medication administration in RACFs.

Methods: Simplification of Medications Prescribed to Long-term care Residents (SIMPLER) is a non-blinded, matched-pair, cluster randomised controlled trial of a single multidisciplinary intervention to simplify medication regimens. Trained study nurses will recruit English-speaking, permanent residents from eight South Australian RACFs. Medications taken by residents in the intervention arm will be assessed once using a structured tool (the Medication Regimen Simplification Guide for Residential Aged Care) to identify opportunities to reduce medication regimen complexity (e.g. by administering medications at the same time, or through the use of longer-acting or combination formulations). Residents in the comparison group will receive routine care. Participants will be followed for up to 36 months after study entry. The primary outcome measure will be the total number of charted medication administration times at 4 months after study entry. Secondary outcome measures will include time spent administering medications, medication incidents, resident satisfaction, quality of life, falls, hospitalisation and mortality. Individual-level analyses that account for clustering will be undertaken to determine the impact of the intervention on the study outcomes.

Discussion: Ethical approval has been obtained from the Monash University Human Research Ethics Committee and



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Summary of a (limited) global perspective



- ▶ In a global context, there remain substantial gaps in falls prevention research
 - even in the community setting (direct translation into countries with different social and cultural differences most likely need consideration of local factors when implementing / translating falls prevention)
- ▶ In Australia - ??need for greater focus on cultural diversity in falls prevention programs
- ▶ Residential care:
 - Slow growth in research evidence
 - Minimal change in overall outcome in past 6 years
 - ??Greater focus on exercise
 - What to do if there is little guidance from the Cochrane review:
 - ?implement methods from single effective RCT?
 - ?other levels of evidence than RCTs
 - best practice guidelines



A Falls Management
Conference for Health
Workers, Managers,
Educators and Carers



3rd GrassRoots Falls Festival



19 & 20 September 2019
Fremantle Esplanade
Western Australia

**PEOPLE, PARTNERS
& PURPOSE:
2020 & BEYOND**

Key Dates

Dec 2018 – Early Bird Registration Opens
Jan 2019 – Abstract Submissions Open
Mar 2019 – Abstract Submissions Close
Apr 2019 – Abstract Outcomes
Jul 2019 – Early Bird Registration Closes / Standard Opens
Sept 2019 - Conference



IAGG Asia-Oceania 2019, Taipei

October **23** to **27**, 2019
Taipei International Convention Center (TICC)

**Health & Wellbeing in the
Silver World:
From Bench to Policy**

**JOIN US AT THE ONLY
MULTIDISCIPLINARY
CONFERENCE IN SILVER WORLD**



KEYNOTE SPEAKERS



**Keynote Lecture
Clinical Science**
Prof. Haruo Hanyu,
Japan



**Keynote Lecture
Gerontechnology**
Prof. Dr.-Ing. Univ.
Tokio Thomas Bock,
Germany



**Keynote Lecture
Behavioural and
Social Sciences**
Prof. Julie Byles,
Australia



**Keynote Lecture
Biological Science**
Prof. Luigi Fontana,
USA



**Keynote Lecture
Policy, Planning
and Practice**
Prof. John Rowe,
USA

<http://www.iagg2019.org/>



CALL FOR ABSTRACT

IMPORTANT DATES

Call for Abstracts/ Submitted Symposium Opens	2018/11/30
Deadline for Abstract Submission/ Submitted Symposium	2019/03/01
Early bird registration and Accommodations Open	2019/03/01
Deadline of Full Paper Submission for SPECIAL ISSUE	2019/04/01
Notifications of Abstract Decisions	2019/05/01
Early Bird Registration Deadline	2019/06/15
Regular Registration Deadline	2019/09/23
The 11st IAGG Asia Oceania Congress of Gerontology and Geriatrics	2019/10/23-27

*Welcome to
Taiwan!*

Asia/Oceania 2019
Regional Congress 2019
23-27 OCTOBER 2019
TAIPEI, TAIWAN

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