A WHO Perspective on Global Implementation of Falls Prevention Programmes

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Falls in older adults: current evidence, gaps and priority challenges
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Presentation outline:

1. Background of falls as a global public health problem
   - An emerging problem in LMICs

2. Results from large studies on falls epidemiology in LMICs

1. Gaps in implementing sustainable programs around the world

2. Possible lessons and future directions
Falls as a huge and challenge problem

- worldwide there is a significant increase in the number of people aged 60+/65+

- a significant increase in overall life expectancy will be also achieved
More than ever ageing of populations is increasing dramatically in low- and middle-income countries (LMICs)

- large in numbers (nearly 80% in 2050)
- more rapidly
- heterogeneous
- health inequalities
Falls and fall-related injuries tend to increase as populations live longer:

- extended exposure window
- cumulative age-related physiological decline, increased disease burden and increased disability
- older women
  - live longer
  - more frail and increased risk of disability
  - increased risk of fall-related injuries

- compression of morbidity?
Falls are among the most burdensome disorders among older people (Prince et al, 2015)

- 17 million DALYs (70% in LMICs)
- 9,500 million YLDs (60% in LMICs)
- Leading cause of unintentional injury (Murray et al, 2012)

Source: http://www.who.int/healthinfo/global_burden_disease/estimates/en
YLDs due to Falls
Both sexes, 70 +, 2013

United States: 498,455

China: 295,782

India: 611,100

http://www.healthdata.org/data-visualization/gbd-compare
DALYs due to Falls
Both sexes, 70 +, 2013

United States: 715,286
China: 735,423
India: 1,115,987

http://www.healthdata.org/data-visualization/gbd-compare
YLDs/100.000 due to Falls – age distribution

80+: 2,322 YLDs (1,725-3,006)

75-79: 968 YLDs (711-1,269)

http://www.healthdata.org/data-visualization/gbd-compare
YLDs/100.00 due to Falls – sex distribution

Male: 1,138 YLDs

Female: 1,371 YLDs

http://www.healthdata.org/data-visualization/gbd-compare
Falls, Deaths per 100,000
Both sexes, 70 +, 2013

http://www.healthdata.org/data-visualization/gbd-compare
What will be the impact of falls and fall-related injuries in coming years?
By large and in a increasing extent the global burden disease will be concentrated in older people living in LMICs

*Figure 1: Leading contributors to burden of disease in people aged 60 years and older in 2010—DALYs (million) by cause and World Bank income*  
DALYs=disability-adjusted life years. CVD=cardiovascular and circulatory diseases. MND=mental and neurological disorders, combining the IHME GBD mental and behavioural disorders and neurological disorders groups.

Prince et al. Lancet, 2014
Globalization of risk behaviors for NCDs is a fact also in LMICs

Figure 1 Ranking of selected risk factors among adults aged 50 years and older across six countries.

Wu et al. BMC Public Health, 2015
Globally, ↑ of YLDs in fall-related conditions

Between 1990 e 2010

- Dementia – 38%
- Parkinson’s disease – 31%
- Knee osteoarthritis – 27%
- Diabetic neuropathy – 29%
- Macular degeneration – 99%

↑ YLDs and age-related fall disorders

http://www.healthdata.org
Combination of chronic conditions and lifestyle behaviors

- **Diabetes** (Pijpers, 2012)
  - Sarcopenia, sensory problems, frailty, balance and gait problems

- **Osteoarthritis/chronic pain** (Ng & Tan, 2013)
  - Mobility problems, decreased joint proprioception, weakness

- **Obesity** (Mitchell et al. 2014)
  - Sarcopenia, inflammation, mobility problems

- **Low physical activity** (Thibaud et al., 2012)
  - Frailty, deconditioning and disuse

**Magnitude and negative impact in LMICs?**
Different risk factors may act in a synergic way and determine risk profiles for different populations.
Challenge for older people (mobility problems) living in large cities in LMICs:

- most countries are experiencing a rapid urbanization without building essential infrastructures
- unfriendly immediate environment
  - decreased walkability
  - less opportunities for being physically active
- home hazards (poor income to maintain houses)
Falls and fall-injuries are increasing?

- ↑ self-reporting of falls steadily rose from 1998 to 2010 in the youngest old

### Table. Two-Year Prevalence of at Least 1 Fall, Stratified by Age, 1998 and 2010

<table>
<thead>
<tr>
<th>Age at Interview, y</th>
<th>2-Year Prevalence, %&lt;sup&gt;a&lt;/sup&gt;</th>
<th>1998</th>
<th>2010</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>65-69</td>
<td>22.3</td>
<td>32.0</td>
<td></td>
<td>&lt;.01</td>
</tr>
<tr>
<td>70-74</td>
<td>25.3</td>
<td>34.5</td>
<td></td>
<td>&lt;.01</td>
</tr>
<tr>
<td>75-79</td>
<td>30.5</td>
<td>38.4</td>
<td></td>
<td>&lt;.01</td>
</tr>
<tr>
<td>80-84</td>
<td>37.6</td>
<td>44.3</td>
<td></td>
<td>&lt;.01</td>
</tr>
<tr>
<td>85-89</td>
<td>45.8</td>
<td>46.7</td>
<td></td>
<td>.68</td>
</tr>
<tr>
<td>≥90</td>
<td>55.8</td>
<td>56.7</td>
<td></td>
<td>.79</td>
</tr>
</tbody>
</table>

<sup>a</sup> Weighted percentages were derived using Health and Retirement Study respondent population weights to adjust for differential probability of selection into the sample and differential nonresponse.

*Cigolle et al, JAMA 2015*
The number of self-reported injuries due to falls increased by 43% between 2003 and 2009/2010.

**FIGURE 1**
Estimated number of cases and rates (per 1000, with 95% confidence intervals) of injuries resulting from a fall, age ≥ 65 years, Canada, 2003, 2005, 2009/2010.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of fall-related injuries</th>
<th>Rate per 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>178,755</td>
<td>47.2</td>
</tr>
<tr>
<td>2005</td>
<td>194,135</td>
<td>49.4</td>
</tr>
<tr>
<td>2009/10</td>
<td>256,011</td>
<td>57.5</td>
</tr>
</tbody>
</table>

Fall injuries are costly

Fig. 1. Total healthcare costs of injury and costs per patient by age and sex due to falls among the older population in the Netherlands (2007–2009).

Hartholt et al., Int. J. Care Injured, 2012
What the results from large population-based studies on falls and fall-injuries in LMICs tell us?

Mexico (Mexico city) - 60+
urban
n=1,062
69.6 ± 7.2 yrs (fallers)
any fall previous year – 33.5%
two or more – 19.5%

Ecuador (coastal and Andes) – 60+
urban and rural
n= 5,227
72.3 ± 8.8 yrs (fallers)
any fall previous year – 37.4%
two or more – 23%

Jamaica (4 parishes) - 60+
urban and rural
n= 2,943
72.2 ± 8.9 yrs (all sample)
any fall last 6 months – 21.7%
two or more – nr

Brazil (110 cities all regions) – 60+
urban
n= 6,616
70.9 ± 8.0 yrs (all sample)
any fall previous year – 27.6%
two or more - nr
north region – 18.6%
southeast region – 30%

Reyes-Ortiz et al, 2005
Orces, 2013
Mitchell-Fearon et al, 2013
Siqueira et al, 2011
What the results from large population-based studies on falls in LMICs tell us?

Nigeria (Yoruba speaking) - 65+ urban, semi urban, rural
n=2,096
75.2 yrs (fallers)
any fall previous year – 23%
two or more – nr

South Africa (Cape Town) – 65+
urban
n= 837
74 ± 6.4 yrs (all sample)
any fall previous year – 26.4%
two or more – 11%

Bekibele & Gureje,2009
Kalula et al,2015
What the results from large population-based studies on falls in LMICs tell us?

India (?) -
urban and rural
n= 10,200
? age
any fall in last 6 months – 14%

Dsouza et al, 2014

Thailand – 60+
urban
n= 1,043
74 ± 6.4 yrs (all sample)
any fall last 6 months – 19.8%
two or more – nr

Assantachai et al, 2005
What the results from large population-based studies on falls in LMICs tell us?

China – 60+
  rural
  n= 936
  71 ± 7.9 yrs
  any fall last year – 22.6%

Taiwan – 65+
  rural
  n= 1,200
  any fall last year – 10%

China – 65+
  urban
  n= 2,310
  72.1 ± 7.3 yrs
  any fall last year – 18 %

Kwan et al,2011
Fall-related injuries in the last 12 months (50+)
n= 34,138 participants

56% rural areas (India 71%, China 53%, Ghana 60%)
50% aged 50 to 59 years
47.5% had lower educational level (until primary)

Hestekin et al, 2013
Results from studies conducted in LMICs:

Ethnic and Socio-economic related risk factors for falls

(↑) Female gender (type of activity women are engaged?)
(↑) Poor socio-economic status (lower income level)
(↑↓) Educational level: primary and secondary is somewhat protective for falling compared with illiteracy, but did not persist for those with higher levels of education. Increased risk of fall-related injuries among older adults with secondary level of education (life style factors, type of activity, information, housing?)
(↓) Black-Africans (life style factors and type of occupation present and past?)
Results from studies conducted in LMICs:

Environmental related risk factors for falls

(↑) Rural, rural Andes mountains and semi urban (topography, housing). But lower fall prevalence in Chinese older adults living in rural areas (physical activity, farming labor)

(↑) Poor housing conditions (inadequate power supply, poor building constructions, water source outside the home)

(↓) Chinese (mainly rural)

Inconclusive - falling indoors x outdoors (related to gender: physical activity level and type of activity)
Results from studies conducted in LMICs:

Behavioral related risk factors for falls

(↑↓) Increased in seniors that reported intense regular exercise. But also increased in those that were sedentary in leisure time
(↑) Obesity and nutritional deficiencies (fall injuries)
(↑) Poor sleeping

Squatting among Chinese
Hurrying and rushing (? in India)
Poor report in some regions related to embarrassment
Life span behaviors?
Overall, the risk of falls can be reduced by 30% based on randomized controlled trials.
Gaps in implementing sustainable programmes

- Evidence-based falls prevention strategies has often not been translated into real changes in clinical practice
- A substantial proportion of programmes do not achieve long term sustainability
- Implementation of fall-prevention programmes is still in its infancy in LMICs
- Insufficient evidence from population-based falls prevention programmes

Child et al, 2012; McClure et al, 2010; Fixsen et al, 2011; Lovarini, Clemson & Dean, 2013)
Macro-level barriers for implementing fall-prevention programmes in LMICs

- Yet health care of older adults is not a public health priority
  - falls and fall-related injuries are not a valued problem/demand/interest
  - overall poor awareness
  - lack of political support
  - lack of long term funding
  - large scale implementation

Urgent need of a positive policy environment
- competing demands in the health system
- lack of an integrated coordination plan
  - health care networks (across different levels of care)
- insufficient intersectoral collaboration and action
  - health, urban planning, transportation (age-friendly cities)
  - “walkability”
- scarcity of large RCTs to identify effectiveness in real world scenario (pragmatic studies, cost-effectiveness studies)

- national coalition strategies and local consortium, integrating key stakeholders are still incipient (experts, researchers, clinical practitioners, consumers)
Organizational and practical barriers for implementing fall-prevention programmes

Lessons learned
Barriers:
- fall-prevention will not benefit them
  - “better for others than for me”
    - not at risk
    - believe to be already engaged in activities of equivalent benefit

Messaging

How to reach/target people in need?
How to amplify coverage with up taking strategies?
How to get people involved (partnerships)?

(Hughes et al, 2008; Horne et al, 2009; Child et al, 2012)
Active and fit older people are fall-free. May turn older people overly confident.

Increase fear of falling and avoiding behaviors. Restrict participation.

1/3 underestimated or overestimated risk of falls.

Vigorous group (20%) “Stoic” group (34%) Anxious group (39%) Fearful group (41%)

Personalize messages in terms of individual risk
Tangible benefits according to cultural values and beliefs
Emphasize independence & active healthy aging

Delbaere et al. BMJ, 2010
Accessibility & Practicability

How to address different levels of needs/vulnerabilities/disability?
How to optimize and balance program benefits & convenience?
How to guarantee the level of supervision that is needed?

Barriers:
- distance or lot of commutes (time travel)
- tense rush hours
- weather constraints: hot days, rainy days, snow
- unfriendly environment: violence, cracked pavements, lack of signalization, perceived as complicated
- lack of a caregiver
- competing demands: time constrain, frail elders tend to have many health care demands

Home-based programs
Frail, very old with poor mobility
Cities with urban mobility problems

- **Barriers:**
  - lack of a caregiver to support activities
  - long lasting prescription & supervision
  - balance an gait exercise safety
  - availability of human resources (multi professional team support)
  - adherence and continuity

Community-based
As easy as possible
Older people tend to value more the convenience “be handy”
**Communication**

How to develop adequate material for people with different educational levels and cultural backgrounds? How to keep interest? Motivate and influence positively? How to disseminate program outcomes and activities?

- **Some barriers:**
  - (-) attitudes or stigma towards aging: mobility aids, fear of dependency and deterioration
  - detrimental health beliefs
  - lack of information (difficulties in using new technologies)
  - illiteracy
  - competing family responsibilities: important support and motivational role of family

Jang et al, 2015
Cultural values
Health beliefs

(-) value of exercising:
inappropriate
incompatible
useless

Perceptions of exercising:
not for elders
shame, acting foolish
waste of time

“Old age as a time to relax”
“Health as a matter of luck”

Social & Psychological
Environmental

Embarrassment of exercising with others
Sense of incompetence, lack of self-efficacy
Being introverted

Physicians do not recommend
Family disapproval
Difficult in socializing
Lack of infrastructure appropriated for exercise
Social isolation

Child et al 2012; Jang et al, 2015

Tailored programmes
Flexibility and adaptability
Human resources capacity

Are there committed & skilled coordinators and leaders?
Are there health practitioners trained in falls prevention?
What level of expertise is needed in each program level and activities?
Will exist a continued support for case discussion, program delivery?
How staff will be evaluated and replaced if necessary?

- Some barriers:
  - health care providers’ may not recognize the potential benefits
  - lack of training in falls prevention and in negotiating skills
  - lack of coaching and ongoing support
  - lack of strategic plan for replacement

Training Programs for primary health care professionals in Brazil

Health Reference Center for older people
Falls awareness week
STEADI – Older Adult Fall Prevention

Make STEADI Part of Your Medical Practice

Falls are not an inevitable part of aging. There are specific things that you, as their health care provider, can do to reduce their chances of falling. STEADI’s tools and educational materials will help you to:

- Identify patients at low, moderate, and high risk for a fall;
- Identify modifiable risk factors; and
- Offer effective interventions.

Materials for Providers

- Tests, fact sheets, case studies, and additional resources
  Learn More >

Videos for Providers

- How to measure patients’ functional ability
  Watch Now >

Materials for Patients

- Educational materials and brochures
  Learn More >

Related Content

- Older Adult Falls

PREVENTING FALLS:
A Guide to Implementing Effective Community-Based Fall Prevention Programs
LMICs urgently need:

- to build up a pathway of care on falls, integrating different care settings, professionals and organizations into a fall action plan to face population ageing

- to investigate cultural influences and socioeconomic constrains (illiteracy, low income, cultural values, perceived fall risk)

- to conduct pragmatic clinical trials to investigate the effectiveness of fall prevention interventions at a population level in different social and cultural contexts

- to build and strengthen networks of research collaboration
Thank you!!!

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