A Community OT Falls Reduction Program: Reducing Falls in Six Months for Elderly Attending Accident and Emergency Department Because of Falls
BACKGROUND

Prevalence of falls in the elderly

Approximately 28-35% of people aged of 65 and over fall each year (WHO, 2007)

Prevalence of community elderly falls in Hong Kong was 19% and the mean number of falls per faller was 1.4. (Chu et al, 2007)

9.9% of falls resulted in bone fractures and 31.3% resulted in soft tissue injuries (Chu et al, 1999)

The excess annual health care costs of fallers versus non-fallers amount to HK$552 million for all community-living elderly in Hong Kong. (Chu et al, 2007)
In the Cochrane Review 2013 (Gillespie et al, 2013)

Group exercise classes and exercises individually delivered at home reduce rate of falls and risk of falling.

Multifactorial interventions integrating assessment with individualized intervention, usually involving a multidisciplinary team, are effective in reducing rate of falls but not risk of falling.

HOME SAFETY interventions reduce rate of falls and risk of falling. These interventions are more effective in people at higher risk of falling, and when delivered by an occupational therapist.
FIRST LOCAL RCT STUDY

A multi-centred randomized controlled trial

Target subjects: Community elderly attending A&E because of falls

Study sites:
- QMH
- PWH
- PMH A&E Departments and Occupational Therapy Departments

Funding support: Research grant - Health and Health Services Research Fund
OBJECTIVE

To show that the “Community OT Falls Reduction Programme” developed locally and carried out by an occupational therapist is effective in reducing falls for those elderly patients who attended A&E department because of falls.
Participants

Inclusion criteria: ≥ 65, Chinese ambulatory with or without walking aid attended A&E because of fall phone MMSE ≥ 15

Exclusion criteria: cases residing at aged homes required hospital admissions cause of fall due to excess alcohol intake or a blow or LOC or seizure
METHODOLOGY

**RECRUITMENT**
- Subjects recruited & consent obtained in A&E Dept
- Baseline assessment on **TUGT & Visual Acuity**
- **Phone MMSE** conducted within 5 days

**RANDOMIZATION**
- Into intervention & control groups by blind researcher.
- Control group: **Wish Well Visit** by non-healthcare trained researcher
- Intervention gp: **Home Assessment** & treatment by an occupational therapist

**PHONE FU**
- Bi-weekly phone follow up on **FALLS** data by blind researcher (for 12 months)
- Phone follow-up at 4 months, 8 months and 12 months by blind researchers on **functional, mental & activity level**
PROGRAMME

Assessment

• Home and daily routine assessment
• Fall risk behavior identification (Clemson 2003)
• Home assessment using Westmead Home Safety Assessment (Clemson, 1997)

Interventions

• Recommend environmental modification to reduce fall hazards
• Prescribe assistive device, where appropriate
• On-site skills training
• Tailor-made fall reduction implementation plan
• Referral to community services/agents, if needed
OUTCOME MEASURES

Primary outcomes:
No. of fallers
No. of falls
Time to first fall
No. of A&E visits due to falls within 12 months follow-up period

Secondary outcomes:
Phone MMSE
BI-100
Falls Behavioural Scale for the elderly
Frenchay Activities Index
RESULTS

Recruitment Period: April 2009 to October 2011

Total subjects recruited from the three A&E departments: 311

37 subjects were excluded since phone MMSE score <15

70 subjects were excluded because subjects were later admitted to aged home or unable to be contacted

n=204
RESULTS

- 204 subjects
- Randomization
  - 101 Intervention group
  - 103 Control group
  - 79 Intervention group
  - 88 Control group
  - 15 subjects subsequently refused wish well visits

22 subjects subsequently refused home visit or home visit could not be arranged within the specified time.
RESULTS

Demographics and Baseline characteristics between groups

<table>
<thead>
<tr>
<th></th>
<th>Intervention Group</th>
<th>Control Group</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>78.67 ± 6.19</td>
<td>77.92 ± 6.16</td>
<td>0.406¹</td>
</tr>
<tr>
<td>Sex</td>
<td>Male: 27</td>
<td>Male: 24</td>
<td>0.866²</td>
</tr>
<tr>
<td></td>
<td>Female: 52</td>
<td>Female: 64</td>
<td></td>
</tr>
<tr>
<td>Time Up and Go Test</td>
<td>26.05 ± 21.26</td>
<td>23.45 ± 24.44</td>
<td>0.548¹</td>
</tr>
<tr>
<td>Visual Acuity (Right eye)</td>
<td>88.33 ± 84.37</td>
<td>100.20 ± 106.50</td>
<td>0.542¹</td>
</tr>
<tr>
<td>Visual Acuity (Left eye)</td>
<td>108.83 ± 95.37</td>
<td>92.55 ± 89.95</td>
<td>0.387¹</td>
</tr>
<tr>
<td>Phone MMSE at baseline</td>
<td>19.96 ± 3.18</td>
<td>19.98 ± 3.62</td>
<td>0.978¹</td>
</tr>
<tr>
<td>MBI at baseline</td>
<td>46.14 ± 5.29</td>
<td>46.30 ± 4.61</td>
<td>0.836¹</td>
</tr>
<tr>
<td>Frenchay Activities Index</td>
<td>19.40 ± 7.25</td>
<td>19.28 ± 7.47</td>
<td>0.053¹</td>
</tr>
</tbody>
</table>

Note: Values are average ± SD or n; *p≤0.05; ¹Student t test; ²Fisher exact test (2 sided)

No difference between the two groups
### RESULTS

**OUTCOMES 1  (at 6 months follow-up)**

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Intervention Group</th>
<th>Control Group</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of fallers</td>
<td>2 (2.5%)</td>
<td>10 (11.4%)</td>
<td>0.035&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Total Falls</td>
<td>2</td>
<td>12</td>
<td>0.027&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Time to first fall (fallers only, mean days SD)</td>
<td>88 (5.7)</td>
<td>89 (58.9)</td>
<td>0.999&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>A&amp;E Visits due to fall</td>
<td>2 (2.5%)</td>
<td>6 (6.8%)</td>
<td>0.197&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>1 (1.3%)</td>
<td>2 (2.3%)</td>
<td>0.999&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Note: *p<0.05; <sup>1</sup>Fisher’s Exact Test (2 sided); <sup>2</sup>Pearson Chi-Square; <sup>3</sup>Mann-Whitney
## RESULTS
### OUTCOMES 2

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Intervention Group</th>
<th>Control Group</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>9 months follow-up</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of fallers</td>
<td>5 (6.3%)</td>
<td>14 (15.9%)</td>
<td>0.0851</td>
</tr>
<tr>
<td>Total Falls</td>
<td>5</td>
<td>17</td>
<td>0.0473*</td>
</tr>
<tr>
<td><strong>12 months follow-up</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of fallers</td>
<td>10 (2.5%)</td>
<td>18 (20.5%)</td>
<td>0.2161</td>
</tr>
<tr>
<td>Total Falls</td>
<td>12</td>
<td>27</td>
<td>0.1793</td>
</tr>
<tr>
<td>Time to fall (fallers only, mean days SD)</td>
<td>242.9 (95.4)</td>
<td>169.2 (112.1)</td>
<td>0.1033</td>
</tr>
<tr>
<td>Emergency attendance</td>
<td>10 (12.7%)</td>
<td>17 (19.3%)</td>
<td>0.3672</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>4 (5.1%)</td>
<td>6 (6.8%)</td>
<td>0.7501</td>
</tr>
</tbody>
</table>

Note: *p ≤ 0.05; 1Fisher’s Exact Test (2 sided); 2Pearson Chi-Square; 3Mann-Whitney
RESULTS

OUTCOMES 3  Survival curves of falls

Log-rank test, 4.827;  
\[ p=0.028 \]
At 6 months

Log-rank test, 3.80;  
\[ p=0.05 \]
At 9 months

Log-rank test, 1.974;  
\[ p=0.160 \]
At 12 months
Results

Outcomes 4

Secondary Outcomes at 4, 8 and 12 months

Phone MMSE
BI-100
Falls Behavioural Scale
Frenchay Activities Index

No significant difference statistically between intervention and control groups
RESULTS

TOP THREE HOME HAZARDS

1. Poor illumination
2. Obstacles in the traffic ways
3. Floor mats
SUMMARY OF RESULTS

This study showed that ‘Community OT Falls Reduction Programme’ for community elderly who attended emergency departments because of fall was effective in reducing:

- the number of fallers and
- the number of falls in 6 months
LIMITATIONS

1. Interruption in the process of subject recruitment by Human Swine Influenza and Winter Surge
2. Limited OT manpower
3. Only phone follow-up was used to check on adherence to OT’s recommendations for home modifications
CONCLUSION

One OT home visit after an elderly fall was effective to reduce falls in 6 months for community dwelling older persons who presented to A&E because of falls.
ACKNOWLEDGEMENT

This study was supported by the grant from the Health and Health Services Research Fund.
THANK YOU