The effectiveness of hip protectors to reduce risk of hip fracture in residents of fourteen long-term care homes: A 12-month retrospective case-control study

Alexandra Korall, Fabio Feldman, Yijian Yang, Ian Cameron, Pet-Ming Leung, Joanie Sims-Gould & Stephen Robinovitch

INTRODUCTION

OBJECTIVE. To offer evidence of the effectiveness of hip protectors to prevent hip fractures in long-term care (LTC), by comparing rates of hip, pelvic and other fractures between falls with a hip protector and falls without a hip protector

Hip Fractures in Older Adults Living in LTC
- Over 28,000 Canadians aged 65 years or older are hospitalized for hip fractures annually
- 95% of age-related hip fractures are caused by falls
- About 1 in 2 residents of LTC will fall each year¹
- Mortality rates as high as 47% one year post-fracture

Hip Protectors
- Soft pads or hard shields embedded in pockets of garments (e.g., underwear, sweat pants) that cover the lateral aspects of the pelvis
- Minimize stress applied to greater trochanter during landing
- Conflicting evidence on the efficacy of hip protectors to prevent hip fractures in LTC

METHOD

Study Design
- 12 month retrospective case-control study

Setting
- Fourteen LTC homes owned and operated by Fraser Health
- Mean (SD, Total) beds = 137 (61, 1923)
- Hip protectors established as best practice in Fraser Health Clinical Practice Guideline (CPG)

Experimental Protocol
- Rolling recruitment between June and December 2015
- Retrieved fall incident report forms submitted in the 12-months prior to baseline (date of enrollment to the study) from the BC Patient Safety & Learning System (PSLS) database
- For each reported fall, extracted data on Participant ID, date/time, whether hip protectors were worn (Yes, No, Unknown), degree of harm* and type/location of injury(s)

Statistical Analysis
- Poisson regression from the Generalized Estimating Equation (GEE) model
- Entered ‘order of falls’ as within-subject variable

RESULTS

Hip protectors were worn in 60% (2108 of 3520) falls

TABLE 1. Incidence of fractures (per 100 falls) in falls with a hip protector and falls without a hip protector.

<table>
<thead>
<tr>
<th>Type of fracture</th>
<th>Falls with a hip protector</th>
<th>Incidence†</th>
<th>No. of falls (per 100 falls)</th>
<th>No. of falls (per 100 falls)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip</td>
<td>7</td>
<td>0.33</td>
<td>13</td>
<td>0.92</td>
</tr>
<tr>
<td>Pelvic</td>
<td>6</td>
<td>0.28</td>
<td>3</td>
<td>0.21</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
<td>0.57</td>
<td>10</td>
<td>0.71</td>
</tr>
</tbody>
</table>

† 2108 falls (59.9%) were protected by a hip protector
‡ 1412 falls (40.1%) were not protected by a hip protector
§ Includes fractures of the skull (n=1), shoulders (n=3), arms (n=2), olecranon (n=1), wrists (n=3), fingers (n=2), ribs (n=2), vertebrae (n=2), legs (n=2), patella (n=2), malleolus (n=3), and feet (n=2)

SUMMARY OF KEY FINDINGS

1. Hip protectors were worn in 60% (2108 of 3520) falls
2. Risk of hip fracture was 64% (95% CI 10-86%) lower in falls with a hip protector compared to falls without a hip protector
3. The use of hip protectors prevented an estimated 12 hip fractures in one year (0.92%-0.33%=0.59% of 2108 falls)
4. No significant differences in non-hip fracture rates, suggesting that hip protectors were probably responsible for the difference in hip fracture rates

CONCLUSION, REFERENCES & ACKNOWLEDGEMENTS

We provide evidence of the clinical value of hip protectors to prevent hip fractures in LTC

Limitations: (i) Did not confirm fractures radiographically; (ii) Per-protocol analysis; (iii) Generalizability beyond the Fraser Valley of BC; (iv) Lower fracture rates than expected could be due to underreporting of fractures in the BC PSLS, but possibly as a result of co-intervention (e.g., Vitamin D supplementation) or relatively high adherence to hip protectors

References:

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