Identifying subgroups based upon Sense of Coherence and physical self-efficacy

WIDENING THE PERSPECTIVES OF FRACTURE PREVENTION IN OSTEOPOROSIS

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Prevent fractures – there is a lot of evidence!

There is a lack of knowledge concerning psychological prerequisites for enhancing behaviours that promote health and decrease the risk of fractures.

Physical activity
- muscle strengthening & balance training
- D-vitamin
- Calcium and nutrition
- Avoidance of tobacco
- Avoidance of alcohol abuse
- Compliance to ordinations

Decrease the risk of falling and
The risk of fall injuries and
The fear of falling...

Ström et al. 2011 Archives of Osteoporosis;
Griangregorio et al. 2013 Osteoporosis International
Hadjistavropoulos et al. 2011 J Aging and Health;
Gillespie et al. 2009 Cochrane; Järvinen et al. 2008 BMJ
The aim of this study:

- Explore psychological aspects and health behaviour in people diagnosed with osteoporosis at the time of a forearm fracture

- Identify subgroups based upon Sense of Coherence (SOC) and Activity Balance Confidence (ABC) with clinical relevance for managing secondary prevention actions
The population

- Women and men suffering a wrist fracture
- At the age of 50 – 80 years
- BMD: equal or less than -2.0 SD T-score

Increased risk for future hip/vertebral fractures and in need of secondary prevention activities

- 256 n underwent osteoporosis examination (72%)
- 121 n (47 %) <-2.0 SD BMD Tscore
- 95 n matched the inclusion criteria
- 85 n (90%) participated 94% women
- Mean age = 65 years

Ström et al. 2011 Archives of Osteoporosis.; Kanis et al. 2008 Osteoporosis International
Method

I. Explored some psychological characteristics, health behaviour and physical capacity of the total population.

II. By using a person-centred analytic approach, hierarchical cluster analysis, we opened up for the possibility to identify typologies among the observations that would add new perspectives in relation to managing secondary prevention.

Hair et al 2010 & Burns & Burns 2008
**Measurements**

- Sense of Coherence (SOC -13)
- Activity Specific Balance Confidence scale (ABC-scale)
- Quality of life (VAS scale of EQ-5D)
- Health behaviour; smoking habits, drinking, physical activity,
- Risk factors for fracture; heridity, history of fractures, fall-accidents, gender,

**Physical performance tests**

- One leg stance 30 s
- Tandem stance 30 s 30 s = cut off for risk of falling

**Time stands test** rise 10 times from chair as fast as possible

- Maximal Walking speed 15 m turn around and return

The tests were carried out 6 week post fracture at the same time as examining the wrist fracture


The Results

• Confirm other research reporting that this population can be considered living healthy and being physically active (walking 6 hours a week!)

• 21% are regularly using tobacco
• 51% had had at least one fracture
• BMD Mean/ Median: -2.6 SD T-score

• SOC-13 mean: 74/91 (SD 12.7)
• ABC-scale mean: 82/100 (SD 17.8)

High scores of physical self-efficacy, ability to managing stress and changing health behaviour?
The main results emerged after identifying two clusters based on Sense of Coherence-13 and the Activity-specific Balance Confidence scale.

Health-resilient group 75 %

SOC -13 $M$: 77 / 91 ($SD = 11$)
ABC $M$: 93 / 100 ($SD = 4.6$)

Health-vulnerable group 25 %

SOC -13 $M$: 66 / 91 ($SD = 14.9$)
ABC $M$: 57 / 100 ($SD = 4.6$)
<table>
<thead>
<tr>
<th></th>
<th>Cluster 1 ($n = 61$)</th>
<th>Cluster 2 ($n = 20$)</th>
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<tbody>
<tr>
<td></td>
<td><strong>M</strong></td>
<td><strong>SD</strong></td>
<td><strong>M</strong></td>
<td><strong>SD</strong></td>
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<tr>
<td>Age</td>
<td>64.57</td>
<td>7.12</td>
<td>68.4</td>
<td>8.59</td>
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<tr>
<td>T-score (BMD)</td>
<td>-2.60</td>
<td>0.44</td>
<td>-2.63</td>
<td>0.41</td>
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<tr>
<td>Quality of Life (EQ5-D)</td>
<td>82.05</td>
<td>14.17</td>
<td>57.22</td>
<td>19.65</td>
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<tr>
<td>Experienced fractures before wrist fracture</td>
<td>0.55</td>
<td>1.03</td>
<td>1.33</td>
<td>0.73</td>
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<tr>
<td>Falls outdoors in the past year</td>
<td>1.26</td>
<td>1.61</td>
<td>1.25</td>
<td>0.97</td>
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<tr>
<td>Falls inside and outdoors in the past year</td>
<td>0.61</td>
<td>2.61</td>
<td>0.45</td>
<td>0.60</td>
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<tr>
<td>Physical Activity (sum. hours/week)</td>
<td>7.52</td>
<td>7.93</td>
<td>3.00</td>
<td>3.18</td>
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<td>Time outdoors summer (hours / week)</td>
<td>3.98</td>
<td>0.13</td>
<td>3.50</td>
<td>0.89</td>
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<td>Time outdoors winter (hours / week)</td>
<td>3.67</td>
<td>0.75</td>
<td>2.90</td>
<td>1.11</td>
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<td>Osteoporosis knowledge</td>
<td>18.82</td>
<td>2.36</td>
<td>18.10</td>
<td>2.29</td>
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</tbody>
</table>

*Note.* The clusters were compared using t-tests (two-tailed) for independent groups. *p < .05; **p < .01; ***p < 0.001
The health-resilient group performed significantly better balance score, muscle straight and gait speed

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<tr>
<td></td>
<td>M</td>
<td>SD</td>
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<tr>
<td>OLS max</td>
<td>24.96</td>
<td>8.56</td>
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<tr>
<td>OLS max eyes closed</td>
<td>8.77</td>
<td>3.38</td>
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<tr>
<td>TS max</td>
<td>28.80</td>
<td>5.04</td>
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<tr>
<td>TS max eyes closed</td>
<td>17.59</td>
<td>12.10</td>
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<tr>
<td>TST</td>
<td>22.83</td>
<td>7.49</td>
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<tr>
<td>Walking speed</td>
<td>18.24</td>
<td>4.50</td>
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*Note. OLS = One Leg Stance. TS = Tandem Stance. TST = Time Stands Test. As the performances for left and right leg within tests of OLS and TS were highly correlated (with rs ranging from .76 to .83), the results from each pair of these tests were combined into a single time score. The clusters were compared using t-tests (two-tailed) for independent groups.

*p < 0.05; **p < 0.01; ***p < 0.001
WHAT IS THE RELEVANCE OF HIGHLIGHTING SOC AND SELF-EFFICACY ASPECTS IN SECONDARY PREVENTION AND HEALTH PROMOTING ACTIVITIES?

- This study indicates that SOC with ABC has an impact on health behaviour, physical capacity, quality of life, future independency and the risk of recurrent falls.

- SOC has been associated with coping skills and the ability to achieve health behaviour changes in previous research.

- In previous studies ABC score below 67 is suggested to indicate higher risk of recurrent falls. According to our findings ABC can be a valuable complement to FRAX.

- This study identifies two subgroups with completely different needs, can SOC and ABC be used as tools for screening those most in need for health behaviour support?

- Can the use of SOC and ABC imbed the risk of triggering a negative spiral of fear, physical inactivity, dependency, and decreased quality of life?

- This study identifies a typology based upon SOC and ABC but due to the small population more research is needed to validate the generalization of this emerged typology.
Thank’s for your attention!