Falls, Bone and Joint Injuries, and Vision Status Among Adult Women Respondents to the 2008 National Health Interview Survey

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Background

• Blindness /visual problems among the 10 most common disabling conditions in the US

• Blindness / visual problems associated with shortened life expectancy and diminished quality of life

• 21.2 million Americans with visual impairment live outside institutions (CDC, 2008)

• Annual new cases to reach 0.5 million by 2025
Effect of vision loss

- Among people aged 65 and older, 54.2 percent of those who are blind and 41.7 percent of those with impaired vision say their overall health is fair or poor.

- Just 21.5 percent of older Americans without vision problems reported fair to poor health.

CDC 2013
Boomers are **inattentive** to eye health

- Boomers tend to believe they have low risk of eye disease
- They tend not to engage in behaviors to reduce risk of eye disease
  - Annual eye exams
  - Sun glasses
  - Smoking cessation
  - Intake of eye-protective foods
  - Exercise
The nursing literature is relatively silent on vision health

- As of 2009, 19 data driven research reports addressed vision status
- In most cases Ns were very small
- In most cases vision / blindness were not central to the study
- Since then, a few nursing studies have been reported in which vision loss is a more central concern:
  - Promotion of physical activity among people with low vision
  - How client records reflect vision status
  - Health literacy among people with low vision
  - Diabetes teaching among people with low vision
  - Depression among older adults with low vision
Purpose of this study

- Examination of vision status as it relates to falls and bone and joint status among adult women respondents to the 2008 NHIS
Theoretical Framework

- Capability Framework of Sen and Nussbaum

- The well-being of a person with disabilities is related to functioning and to their freedoms to enjoy the kind of life they value
Variables were identified related to:

- Falls within the past 5 years
- Falls at least once per month
- Injury related to a fall within the past year
- Falling due to tripping or stumbling, slipping, not seeing, or problem with an aid
- Fracture or joint injury that restricts activity
- Functional limitation from all conditions
- Musculoskeletal conditions that reduce activity
- Chronic bone or joint injury
- Chronic musculoskeletal problem
- Vision status
The National Health Interview Survey

- NHIS data are collected by US Census workers
- Home interviews with telephone follow-up
- Computer assisted personal interview
- Approximately one hour in length
- Most items are fixed response
- Probabilistic to represent all states and DC
NHIS, continued

- Oversampling of underrepresented minorities
- The NHIS website includes the interview schedule and surveys from the 1960s to present
- The NHIS and Census Bureau IRBs approve the study annually and each item that is added in a given year
- The current design was implemented in 2006 and will be revised in 2016
NHIS, continued

- 2008 Survey included extensive supplemental questions on hearing and vision status

- Combining surveys is recommended only in extreme circumstances because of reduction in number of variables that carry across the years
Methods

- This study was approved by the VU IRB
- Data from the 2008 survey were downloaded into SPSS 20.0
- Women were isolated from the total data set for an N of 12,267 adult (18-85+) women
- Categorical data were subjected to chi-square analysis
- Categories were collapsed where initial analyses indicated, primarily to get cell sizes sufficient for meaningful analysis
Results

• Of 12,267 women, 1592 reported “trouble seeing even with glasses/ lenses” (13.0% of total)

• 48 reported that they are blind or “unable to see at all” (0.4% of total)
Demographics:

- Non-Spanish / Hispanic background: 10,204
  - 1366 low vision (13.4%), 38 blind (0.4%)

- Spanish / Hispanic Background: 2,063
  - 226 low vision (11%), 10 blind (0.5%)

AND

- White: 7337
  - 1115 low vision (13.1%), 40 blind (0.5%)

- Black / African American: 1815
  - 288 low vision (13.7%), 5 blind (0.2%)

- Indian, Asian, Multiracial, Other: 1475
  - 1592 low vision (13.0%), 3 blind (0.2%)
Vision status and ethnicity / race

<table>
<thead>
<tr>
<th>Ethnicity / Race</th>
<th>Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity</td>
<td>9.440(df2)**</td>
</tr>
<tr>
<td>Race</td>
<td>9.710 (df4)*</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01
## Falls and Vision Status

<table>
<thead>
<tr>
<th>Variable</th>
<th>Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fell within past 5 years (50%, 34.3%, 16.8%)</td>
<td>301.185 (df2)***</td>
</tr>
<tr>
<td>Falls at least once / mo (10.4%, 3.8%, 1.1%)</td>
<td>94.299 (df2)***</td>
</tr>
<tr>
<td>Fall-related injury past year (10.4%, 12.4%, 4.9%)</td>
<td>144.946 (df2)***</td>
</tr>
<tr>
<td>Fall: Tripped or stumbled in past year (29.2%, 13.7%, 6.7%)</td>
<td>125.407 (df2)***</td>
</tr>
</tbody>
</table>
## Falls and vision status, continued

| Fall: Slipped past 12 months (10.4%, 8.5%, 4.5%) | 51.722 (df2)** |
| Fall: directly related to not seeing (12.5%, 2.4%, 0.2%) | 262.189 (df2)** |
| Fall: problem with cane, walker, etc. (4.2%, 0.6%, 0.1%) | 51.765 (df2)** |
## Bone/joint status and vision status

<table>
<thead>
<tr>
<th>Variable</th>
<th>Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bone / joint injury causes difficulty with activity (8.3%, 5.5%, 2.7%)</td>
<td>43.244 (df2)***</td>
</tr>
<tr>
<td>Any functional limitation (81.2%, 65.7%, 34.6%)</td>
<td>600.502 (df2)***</td>
</tr>
<tr>
<td>Musculoskeletal limitation to activity (14.6%, 12.0%, 6.2%)</td>
<td>76.190 (df2)***</td>
</tr>
</tbody>
</table>
Bone / joint status and vision status, continued

| Chronic bone / joint condition (8.3%, 5.1%, 2.5%) | 39.581 (df2)*** |
| Chronic musculoskeletal problem (14.6%, 11.4%, 5.9%) | 72.797 (df2)*** |
Discussion/Conclusions

- 13.0% of this sample reported trouble seeing that cannot be corrected by lenses, and 0.4% cannot see at all.

- Racial and ethnic differences in incidence of self-reported blindness and low vision were reported though the collapsed categories and in some cases small Ns per cell make it challenging to fully understand this pattern.
Discussion/Conclusions, continued

- Women who are blind and women with low vision are more likely to report falls than women with normal vision.
- Women who are blind and women with low vision are more likely to report injury related to a fall than women with normal vision.
- Women who are blind and women with low vision are more likely to report functional limitation than women with normal vision.
- Women who are blind and women with low vision are more likely to have bone or joint injuries including those that restrict activity than women with normal vision.
- Women who are blind and women with low vision are more likely to report a chronic musculoskeletal problem than women with normal vision.
Discussion / Conclusions, continued

- Previously I have reported that women who are blind or have low vision are more likely to report difficulty going to activities or events; and are less likely to engage in moderate or vigorous physical activity than women with normal vision.
- These findings help elucidate those findings.
- These findings support the observation that health limitations needed to be viewed in a holistic manner; body systems are essentially interconnected.
- Capability as an approach for understanding disability is fruitful, with its attention to function, agency, and freedom.
Limitations to the study

- Secondary data analysis is inherently limited by the purpose of the original study versus the current study.
- Items may not address current issues precisely or sufficiently.
- The N in some cells may be too low to allow meaningful analysis of multiple factors.
Limitations, continued

- The sampling plan is limited by federal budgetary concerns and the need to include sufficient numbers of under-represented minorities.

- Census workers who collect data are high school graduates with a few days’ training in NHIS though same-language follow-up is available by telephone.
Implications

- Nurses and the health care delivery system need to be attentive to the scope of the problem of visual impairment.
  - Safety needs to be a heightened concern when vision is impaired.
  - PT and OT to maximize capabilities needs to be part of a comprehensive health management plan.
  - Falls is an area for regular assessment among people with impaired vision.
  - Bone / joint / musculoskeletal status is also an area for regular assessment among people with impaired vision.

- This problem will become more prevalent as Boomers age and will impact both the nursing labor force as well as the people for whom we care.
Questions?

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