Kristin T. Wright
April 20th, 2018

Annotated Bibliography of Primary Sources on Demographic and Self-Report Measures and Cognitive Screening for Falls Risk Assessment.

Gazibara T, Kurtagic I, Kisic-Tepavcevic D, et al. Falls, risk factors and fear of falling among persons older than 65 years of age. *Psychogeriatrics*. 2017;17:215-223.

Summary – This article researched the risks associated with falling and the level of fear of falling among older adults aged sixty-five and older. Furthermore, it was stated that people fall inside and outside of their home and this can be caused by a variety of intrinsic (ie: dizziness, weakness, medications, etc.) or extrinsic factors (environmental factors – uneven or slippery surfaces, poor lighting, etc.) Indoor falls have been found to be in individuals with failing health and sedentary lifestyles. The prevalence of fear of falling has been found to be around 90% in fallers and 65% in non-fallers and those who had a fear of falling present with gait disturbances. In this study they found that more women fell and were more likely to report falls than men. They also found that the number of falls correlated with the number of medications they were on. In addition, approximately 30% of those who fell had a fear of falling and 16% of these decreased their daily activities due to this fear. Interestingly, they found that those who fell frequently had a lower fear of falling than others. They postulated that this was due to lack of concern about possible consequences of falling.

Relevance – It is important to identify risk factors for falls so that a proper fall prevention program can be initiated. From this study it was found that women are more likely to fall, have a fear of falling, and decrease their level of activity due to this fear, but that they are more open to discussing their falls and possible fall prevention program implementation. It also brings to light medications and their effect on falls. One possible reason for the higher number of women fallers was due to their possibly having decreased strength in their dorsiflexors and decreased range of motion. These are important risks and deficiencies to note as they can be charted using the information in this project as well as improved with an intervention program such as CHAMP.

Lajoie Y, Gallagher SP. Predicting falls within the elderly community: comparison of postural sway, reaction time, the berg balance scale and the activities-specific balance confidence (ABC) scale for comparing fallers and non-fallers. *Arch Gerontol Geriatr* .2003;38:11-26.

Summary – This article researched cut-off scores for the Berg balance scale, ABC scale, and postural sway in order to suggest an assessment and prevention program for fallers in older adults. They found that people who fall have slower reaction times, lower scores on the Berg and ABC scales, and have postural sway frequencies higher than those who do not fall. When these factors were combined they found they significantly predicted

falls with 89% sensitivity and 96% specificity. They concluded in their study that the with an ABC scale cut-off score of 67% and above they can correctly classify fallers and non-fallers with an 84.4% sensitivity and 87.5% specificity. Furthermore, they concluded that an assessment which includes the 14-question Berg, the ABC scale, reaction time, and postural sway frequencies provides a great falls monitoring assessment which is very accurate.

Relevance – This article is very relevant to this project and to falls assessment and intervention programs in general. Specifically, it provides a validated cut-off score for the ABC assessment, but also provides an evidence based program that healthcare providers can administer fairly easily in order to determine a person's risk of falling. It is beneficial to have a validated and research backed program in order to identify falls risk, decrease falls, and overall reduce morbidity, mortality, and costs associated with falls.

Grenier S, Payette MC, Langlois F, Vu TTM, Bherer L. Depressive symptoms are independently associated with recurrent falls in community-dwelling older adults. *Int Psychogeriatrics.* **2014;26;9:1511-1519.**

Summary – This article examines the relationship between depression and falls while controlling for other variables that may contribute to falls such as cognition, medications, and activity levels among others. They state that over 33% percent of older adults report depressive symptoms. The GDS long form was used to assess for depressive symptoms, which has good psychometric properties. The results of this study demonstrate that depressive symptoms significantly and independently associated with recurrent falls. Another finding found that those who had fallen 2 or more times had a GDS score which is almost double the average of non-fallers.

Relevance – This study is highly relevant due to the fact that they were able to separate out that depressive symptoms were independently linked to recurrent falls, where they controlled for over 10 variables that may contribute to falls. In addition, the GDS was used to rate the participants level of depressive symptoms so this coincides with the current project. Furthermore, they were also able to demonstrate that even low levels of depressive symptoms may contribute to recurrent falls in older adults.

Toposki TD, LoGerfo J, Patrick DL, et al. Rapid assessment of physical activity (RAPA) among older adults. *Prev Chronic Dis.* **2006:3(4):1-8.**

Summary – This study demonstrates the validity of the Rapid Assessment of Physical Activity (RAPA). In this study they used the CHAMPS (Community Health Activities Model Program for Seniors) as comparison along with two other measures the BRFSS (Behavioral Risk Factor Surveillance System) and PACE (Patient-Centered Assessment and Counseling for Exercise). The found that the RAPA was similar to the CHAMPS program where it showed better sensitivity (81%), positive predictive value (77%) and negative predictive value (75%) when compared to the other two measures. They concluded that the RAPA is a valid measure that is very easy to use with older adults. This scale is one of the only physical activity scales that assesses strength and flexibility.

Relevance – This article demonstrates the validity of the RAPA when compared to other physical activity measures, specifically the CHAMPS program for exercise. This tool is a very quick and easy to use assessment measures which older adults find easy to complete and that it correlates with activities that they may participate in. It is important that this tool addresses strength and flexibility as these are both activities that older utilize and they also can demonstrate a reduction in falls rate when done on a regular basis. The RAPA is a tool that be of use in a falls risk assessment program to gauge physical activity levels in older adults.

Uemura K, Shimada H, Makizako H, et al. Effects of mild cognitive impairment on the development of fear of falling in older adults: A prospective cohort study. *JAMDA. 2015;16:e9-e13.*

Summary – This study investigated whether mild cognitive impairment (MCI) increased a person's fear of falling (FoF). They stated that a fear of falling can create a negative spiral of effects such as avoidance of their once regular activities, decrease in cognition, loss of independence and ultimately put the person at an increased risk of falling. It was also stated that MCI may predict falls but this was not the case when controlling for age and education. They also mentioned that a FoF might be as harmful mentally and psychologically as falling itself. They found in an earlier study that people with MCI had a higher fear of falling that those with normal cognition. In the present study they found that MCI was independently associated with a FoF.

Relevance – This research is relevant for many reasons. First it demonstrates that individuals with MCI are at risk for developing a FoF, which then may lead to activity reduction, decreased social interaction, depressive symptoms, muscular atrophy, and overall functional decline. Furthermore, it demonstrates the need to assess for FoF with a scale such as the Falls Efficacy Scale. The evidence for MCI leading to new levels of FoF is important as this is a risk factor for falls.

Montero-Odasso M, Speechley M. Falls in cognitively impaired older adults: Implications for risk assessment and prevention. *JAGS*. 2017;1-19.

Summary – This article examined the relationship of cognition in falls and ways to manage and prevent falls in older adults. They state that cognitive impairment and falls go hand and hand, gait deviations are greater in those with cognitive impairments, and that the number of falls among older adults increases with mental decline. In those individuals with diagnosed cognitive impairment and a history of falls risk, they are 5 times more likely to be admitted to institutional care. Recent research has included falls and cognitive decline together whereas earlier research looked at them separately. They suggest that cognition as well as executive functioning should be assessed during falls risk assessments. Fall prevention programs should include dual-tasking and improving attention and executive functioning can improve gait thereby decreasing a person's risk for falling.

Relevance – This is another article which demonstrates that those who have cognitive impairments are at an increased risk for falls. This article delves even further into the subject where they specifically target executive functioning and also provide suggestions such as cognitive, dual-task, attention, and gait and balance training as these strategies may reduce their risk of falling.

Yesavage JA, Brink TL, Rose TL, et al. Development and validation of a geriatric depression screening scale: A Preliminary report. *J Psychiatr Res.* 1983;17:37-49.

Summary – This study examined the reliability and validity of the Geriatric Depression Scale (GDS) where it was compared to the Hamilton Rating Scale (HRS-D) and the Zung Self-Rating Depression Scale (SDS). The researchers took the 30 most highly correlated questions and put them together to form the GDS. It was also found that the GDS related very well with the Research Diagnostic Criteria (RDC) for depression. In addition, they also noted the cut-off scores where a cut-off of 1 on the GDS is associated with an 84% sensitivity rate and a 95% specificity rate.

Relevance – This scale is found to be valid and reliable when compared to other scales. What is more important about this scale is that it is specifically for older populations. It is imperative to use scales that are reliable and validated and that have cut-off scores that can be used to demonstrate a person's risk of both depression and falls risk.

Gleason CE, Gangnon RE, Fischard BL, Majoney JE. Increased risk for falling associated with subtle cognitive impairment: Secondary analysis of a randomized clinical trial. *Dement Geriatr Cogn Disord.* 2009;27:557-563

Summary – This study examined small deficits within the Mini Mental State Exam and their effect on falls risk. This article states that the normal cut-off for falls risk on the MMSE is less than or equal to 24/30. However, they note that in a study done by Kenosha County Fall Prevention they found that subjects who scored below 28/30 on the MMSE had a 3x greater risk for falls compared to those who scored a 30/30, but this was not controlling for other factors. Due to this finding they wondered if falls risk increases with each numerical decline in the MMSE. The subjects in this study were mainly women, were community dwelling, and had many comorbidities. It was found that MMSE scores ranging from 22-30 were associated with a log-linear increased falls risk. They also found that a person with a score of 25 on the MMSE had a significantly higher rate of falls than someone with a 26.

Relevance – This is relevant study since the current cut-off for the MMSE is at 24/30. However, this study also was subjected to a low sample size, especially for the individuals with scores in the 22-26 range. It is valuable to know that participants who demonstrate MCI, comorbidities, and a history of falls may be at greater increase of falls with each incremental decrease in the MMSE. This is something healthcare providers should consider when charting change over time. More studies need to be done to validate this before changing the current cut-off.