CAHE JC Critically Appraised Article Summary

Journal Club criteria

Date of submission Pilot 2007

Journal Club location Elderly Care Housing Inc

JC Facilitator Philippa Robert

Clinical Scenario

Do foot problems contribute to falls in community dwelling elders?

Review Question/PICO/PACO

P Community dwelling older people

I Foot problems

C No foot problems

O Falls

Article/Paper

Menz, HB *The Contribution of Foot Problems to Mobility Impairment and Falls in Community-Dwelling Older People*. Journal of the American Geriatrics Society.2001;49(12):1651

Article Methodology: Cohort

Returned JC on: Pilot 2007

By CAHE staff member: Matt Sutton

Ques No.	Yes	Can't Tell	No	Comments
1	✓			**Population** Community dwelling adults>75 years old Excluded if had Parkinson's Disease or reduced cognition **Risk factors** Foot problems **Outcomes** Balance Functional Tests, eg stair ascent Sensorimotor Assessments Falls History

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Ques No.	Yes	Can't Tell	No	Comments
2	✓			A cohort study is the appropriate way to address the question of whether foot problems may contribute to falls and mobility issues with older adults. **Is it worth continuing? *Yes***
3		✓		The cohort was selected from a sample of members from a private insurance company. This database in turn was taken from a sample used in a RCT for falls prevention strategies. Possible issues for selection bias include: ▪ Socio-economic-likely to be higher income earners if have private insurance ▪ Initial selection criteria for the RCT is unknown and may influence outcomes, for example, the initial study may only be inclusive of non-fallers ▪ The effect of any interventions introduced by the original study if any. In order to clarify the last 2 issues, the authors would need to be contacted. It is also unclear as to why from the original sample size of 684, only 135 were assessed for foot problems other than podiatrist availability. It would seem that the original cohort of 684 was used as part of another study. This also is a source of possible selection bias.
4	✓			Foot problems were determined from clinical assessments performed by a podiatrist with 7 years postgraduate experience. A definition of foot problems was developed by the authors, was well defined in the article and tested for reliability. No validity tests were carried out.
5	✓		✓	**Balance** Evaluated barefoot using tests of postural sway and coordinated stability. Postural sway was measured using a sway meter as were other balance tests. Reliability and validity were reported by citing other references **Functional Tests** Various functional mobility tests including timed 6m walk and alternate stepping tests were used and reliability studies references. **Sensorimotor Assessments** "*Visual acuity* (in logMAR) was measured binocularly using a high- (85%) and low- (10%) contrast letter chart. *Contrast sensitivity* was assessed using the Melbourne Edge Test in both standard (near) and enlarged (distant) forms. *Depth perception* was measured using a Howard-Dohlman depth perception apparatus. *Proprioception* in the lower limbs was tested using an apparatus based on a design by De Domenico et al *Vibration sense* was measured using an electronic device that generated a 200 cycle/second vibration to the tibial tuberosity.

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Ques No.	Yes	Can't Tell	No	Comments
				Tactile sensitivity was measured with a Semmes-Weinstein pressure aesthesiometer directed at the lateral malleolus of the ankle. *Knee extension*, *knee flexion*, and *ankle dorsiflexion strength* (in kg) was measured in the seated position with the angles of the hip and knee set at 90 degs *Reaction time* (in milliseconds) was measured with a simple reaction time task, using a light as the stimulus and depression of a switch by the foot as the response." These measures all had references to support their psychometric properties. **Falls History** This was done retrospectively due to the implementation of a falls reduction intervention as part of another study. There is no information as to how this was evaluated. Given that this is the most important primary measure it reduces the quality of the paper given the lack of reporting of evaluation methodology and the retrospective nature of the measure. It is questionable as to whether all participants would be able to give an accurate falls history for the preceding 12 months. There is no reporting of blinding of the assessors.
6	✓ ✓			**A. Have the authors identified all important confounding factors?** It appears age the authors have identified most confounding variables for influencing falls; age, lower limb strength, proprioception and sensation and vision. Type of footwear has not been included. **B. Have they taken account of the confounding factors in the design and/or analysis?** Pearsons correlations and multiple regressions were used to examine the effect of the confounding variables
7		✓ ✓		**A. Was the follow up of subjects complete enough?** No follow up as falls data (the only longitudinal outcome) was carried out retrospectively **B. Was the follow up of subjects long enough?** The only outcome that requires follow up is that of falls. As stated before, this was carried out retrospectively over a 12 month period. This is generally considered a reasonable timeframe.

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Ques No.	Yes	Can't Tell	No	Comments
8				The foot problem score was a significant independent predictor of performance on the coordinated stability test, stair ascent and descent, and the alternate stepping test along with other sensorimotor characteristics, such as lower limb strength and vibration sense. There is a statistically significant difference in foot problem, sway on foam and stair descent scores for non or once only fallers versus multiple fallers. There was no reporting on non fallers versus fallers. This would seem to be an important comparison, however, no reason for it's exclusion is given. Statistical significance is reported with use of p values, and beta weighting (i.e. contribution of a variable on an outcome).
9				P values are reported as being <0.05 or 0.01, rather than reporting actual values.
10	✓			It would seem reasonable from the study that foot problems may contribute to multiple falls, however the retrospective nature of the falls measure, and the lack of analysis for fallers versus non fallers reduces the confidence with which definitive conclusions could be drawn.
11		✓		It is probable that the results can be applied to the local population; however the presentation of the characteristics of the sample is poor (eg demographic characteristics/distribution), whilst the testing was done in a laboratory, and not community, environment. Whilst the study incorporated a large sample of community-dwelling elderly, the extent to which this is generalisable to other settings (notwithstanding the poor sample reporting) is a decision for each individual setting.
12		✓		The authors themselves state that "…the role of foot care specialists in falls prevention has received only limited attention in the literature." (p.1656). This is highlighted by most of the presented literature pertaining to theoretical arguments, which do support the results, as opposed to presenting other studies with similar results.

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