Reviewer's report

Title: The Impact of Waist Circumference on Function and Physical Activity in Older Adults: Longitudinal Observational Data from the Osteoarthritis Initiative

Version: 1 Date: 9 April 2014

Reviewer: Manfred Stommel

Reviewer's report:

Major Compulsory Revisions:
(1) This paper offers some (though not surprising) evidence about the association between waist circumference (a measure of visceral adiposity) and physical functioning and quality of life. However, it does not make the case that waist circumference (WC) is a better predictor of these outcomes than the BMI. After citing one article that the BMI has poor sensitivity and specificity in identifying adiposity, the authors report a high correlation (+0.79) between the BMI and waist circumference in the data. Subsequently, the BMI is simply dropped from the analysis.

This poses the question, would the BMI, separated into quartiles like the WC, have produced very similar results? Does the WC measure predict the chosen outcomes better than the BMI? Does it add anything to predictability based on the BMI? Without addressing this basic question, one does not really have any reason to use the WC instead of the BMI.

(2) Regarding the specific analyses chosen, it is not clear why the authors chose to divide their sample into 4 WC quartiles, rather than using the continuous WC scores as predictors; if the associations between the SF-12 and the WC scores are non-linear, this could have been explored with continuous scores as well.

(3) Concerning the control variables in tables 3 and 4, the authors do not make a distinction between true confounders and mediating/intervening variables: what is the meaning of “controlling for” the Charlson co-morbidity index, if several of the comorbidities in this index are themselves likely outcome of high-level adiposity? A similar point can be made about OA and hip pain in Table 3.

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
'I declare that I have no competing interests'