Reviewer's report

Title: Detecting dementia in patients with normal neuropsychological screening by test of smell and palomental reflex: an observational study

Version: 2

Date: 13 June 2015

Reviewer: Peter William Schofield

Reviewer's report:

Minor essential revisions

A very simple test of olfaction is used in this study. Citations to two papers in support of the sensitivity and specificity of what they refer to as the Smell Identification Test (SIT) are misleading. The paper by Stamps et al. (reference 10), described the properties of a smell detection test (i.e. not identification); in that study asymmetry in detection of the odour between the left and right nostrils had diagnostic salience. This is quite a different test from the one described and used in the current work. In the Barresi paper (reference 11), mention is made of the UPSIT, which is also known as the Smell Identification Test (SIT). This is also a very different test from the one described in the current paper, involving as it does the administration of 40 different odours. Most readers of the present manuscript would be, as I was, initially confused by the terminology used by the investigators. I think a different term than SIT needs to be used, and the citations of ref 10 and 11 referred to more appropriately.

Is it really the case that only patients who GPs 'suspect them for dementia' are referred to the memory clinic? Perhaps the investigators mean this as a shorthand term for 'having an underlying dementing disorder'? If so, I think a geriatrics journal warrants this greater level of precision of language. Even assuming my suggested terminology, I am surprised at the suggestion that no referrals are made for assessment at memory clinics unless possible underlying dementing disorders are suspected. Do the investigators infer this, or is it always specified in a referral letter or such like? Unless this is always specified by GPs, I would suggest the investigators rephrase, perhaps along the lines of 'patients referred by GPs seeking diagnostic clarification, including the detection and characterization of possible underlying dementing disorders'.

In terms of the value/diagnostic yield of the procedures, the investigators suggest that the high specificity recommends the procedures have the benefit of flagging individuals for further assessment. This raises the question of whether the investigators think that the absence of positivity on (one or both) the tests should influence clinician behaviour, for example not to proceed with further evaluation or referral, and/or to reassure the patients. I would suggest the data would not support such a clinician response to negative tests, particularly if detecting/characterizing MCI, for example, is regarded as a worthy goal. I think more discussion contextualizing the results of the study, insofar as they have relevance for informing the decision to refer to an MDC, or undertaking additional
investigations, is needed.

From personal experience, the strength of odour can vary according to the nature of the coffee (e.g. instant vs freshly ground, etc. It would be helpful for the authors to specify/describe their odorant a little more precisely, relevant for any future attempt to replicate their study.

Under limitations, the sentence ‘Both SIT and PMR maybe more common etc’., does not make sense. (I presume impaired smell is what they mean).

Reference 11 is incorrect and should be reference 17.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests