Reviewer’s report

Title: Association of Catechol-O-Methyltransferase Single Nucleotide Polymorphisms, Ethnicity, and Sex in a Large Cohort of Fibromyalgia Patients

Version: 1 Date: 21 Mar 2018

Reviewer: Andrea Nackley

Reviewer's report:

The manuscript has been improved. Remaining concerns are indicated below.

Major Concern:

There is still a concern that demographic risk factor analysis compares FM and non-FM groups, while genetic risk factor analysis compares FM and 1000 genomes groups. The authors state, "The non-FM participants were recruited in a similar fashion as the FM participants. However, we acknowledge that because participants were recruited from doctor visits, mainly in offices that deal with pain, our non-FM sample is skewed toward those who are sicker and/or also have chronic pain conditions.”

(a) In the Methods section, authors state that non-FM participants were identified as those not diagnosed with FM that were further filtered to exclude conditions comorbid with FM (eg, OA and TMD) as well as chronic conditions and pain diagnoses. This does not fit with the response above. More information- specific details need to be shared regarding the non-FM group.

(b) If the non-FM group includes an ambiguous group of individuals, some of whom have chronic pain conditions that possibly overlap with FM (other than OA and TMD), then interpretation of demographic findings is compromised.

(c) On the other hand, if the pain status / chronic pain condition diagnosis is known for members of the non-FM group, then a direct comparison of painful FM vs painful other conditions (which might pare down the N from the total non-FM group) might provide useful demographic and genetic markers specific for FM vs other pain conditions.
Minor Concern:

In the Abstract, authors now clarify that females between 49-63 years are at higher risk of FM. Then they go on to note that low and mid age groups have increased odds of FM after adjusting for sex and ethnicity. The terms 'low' and 'mid' have not been defined for the reader to be able to interpret. The age tertiles need to be defined in the Methods section of the Abstract.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

No

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Unable to assess

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

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