Reviewer’s report

Title: The Association of Alcohol Consumption with Mammographic Density in a Multiethnic Urban Population

Version: 4
Date: 28 October 2014
Reviewer: Katherine Reeves

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Quandt et al evaluate associations between alcohol intake and mammographic density in a cross-sectional study of a racially and ethnically diverse cohort. A strength of the study is that investigators obtained a comprehensive assessment of alcohol exposure. Overall, they report a positive association between a high level of current drinking (>7 servings/week) and percent density, though no associations with either dense area or non-dense area. The diverse study population allowed for evaluation of effect modification by race/ethnicity, with results fairly consistent across these groups and no statistical evidence for an interaction. An important weakness is that the menopausal status and hormone therapy use of the participants are ignored, though density is known to change markedly across the menopausal transition and with hormone therapy use. In general, this manuscript is well-written and reports important results in a unique and understudied group of women.

Major Compulsory Revisions

1. Methods, lines 77-79: Were data on hormone therapy use or menopausal status collected? As noted above, menopausal status and HT use are important determinants of mammographic density. Menopausal status and HT use should be adjusted for in all analyses, or this should be acknowledged as a limitation if data were not available.

2. Results, line 158: Further commentary on the woman with 70 servings/week of liquor would be useful. Did the investigators judge this report to be accurate? Were results similar to those reported in the manuscript when this observation was excluded from analyses?

3. Results, lines 176 and 183: Why was an additive interaction tested? Typically, a multiplicative interaction is assessed in a regression model. Further details on the approach to testing for interaction are needed in the Methods section.

4. Table 2: It seems counterintuitive that alcohol could be significantly associated with percent density, but not associated with either dense area or non-dense area, from which percent density is calculated. This could be due to the fact that each density measure is adjusted for a different set of covariates. Revising these results to adjust for a common set of covariates would be useful.

5. Discussion, lines 239-241: As currently written, perhaps in error, this sentence contradicts itself and also is not consistent with the findings reported. The study found no significant effect modification by race/ethnicity, though did find a
suggestion that perhaps the effect was strongest in Whites. The small sample size limits the ability to test for interaction, and this should be noted as a limitation.

Minor Essential Revisions
1. Abstract: The abstract does not discuss the race/ethnic stratified results at all, though this was clearly a primary goal of the analysis and truly represents the unique contribution of this manuscript beyond existing literature.
2. Background, paragraph 2: The authors nicely discuss the literature on alcohol and density and differences in alcohol consumption by race/ethnicity, but they fail to take this a step further and discuss how this could result in the association between alcohol and density varying by race/ethnicity (and why this would be important to know).
3. Methods, lines 69-70: Were any women diagnosed with breast cancer from the mammogram used in the study? If so, were these participants included in the analyses?
4. Methods, line 78: Was BMI self-reported by participants or measured as part of the clinical interview?
5. Methods, lines 108: Please clarify if mammograms were captured on film and then digitized or if digitally acquired images were used.
6. Results, lines 178-183: Were the results in the analyses of dense breast area similar to those observed for percent density?
7. Discussion: A more thorough discussion of alcohol’s effects on estrogen is needed.
8. Conclusion: The ability to look at racial/ethnic groups that are understudied is what truly makes this manuscript unique, and these results should also be included in the final conclusion.

Discretionary Revisions
1. Abstract: It would be helpful to provide more detail on the study design and how density was assessed.
2. Background, lines 53-55: The comment on breast density legislation does not seem relevant here, and is a distraction from an otherwise nicely written introduction.
3. Figure 1 and Table 1 are largely redundant. Perhaps rows could be added to Table 1 indicating the distribution of <=7 servings/week and >7 servings/week.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

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.