Reviewer’s report

Title: Vaginal health and hygiene practices and product use in Canada: A national cross sectional survey

Version: 1 Date: 12 Apr 2016

Reviewer: Rebecca Brotman

Reviewer's report:

The authors conducted a large online survey (n=1435 respondents) of feminine hygiene practices and vaginal symptoms. While it is laudable that the investigators launched such a large study, I believe the data can be better clarified and presented. For example, the authors did not clarify a time period for the product use or symptoms. "Lifetime use" of a product appears to have been evaluated against "ever" report of symptoms. This is a really broad cross tabulation. (If I understand the analysis correctly?) The authors appear to have data on symptoms and hygiene use in the prior 90 days but they didn't use the data for the bulk of the paper (Table 2)? Overall, I think the authors have a useful dataset but the paper would benefit from being re-analyzed and re-presented with restricted temporal windows. Additional specific comments are listed below:

1) Regarding the references chosen on page 3 line 7 (ref 2-6), I would refer the authors to Dr. Martin's review in Am.J Med.Sci. 2011. Hickey's paper briefly discusses epidemiologic factors (antibiotic use, douching, hormonal contraception) but is much more focused on ecologic factors. Another good primary reference for epidemiological factors associated with BV are any of the papers from Catriona Bradshaw or Jeanne Marrazzo's group.

2) With respect to the literature review (lines 16-20), the authors may find utility in citing another important national prevalence survey of douching --- the survey conducted by NHANES of over 3000 U.S. women (Koumans et al Sex Transm Dis. 2007).

3) Did participants mail vaginal samples to the study PIs? If the authors have samples, they can evaluate them for vaginal microbiota or Gram stain scoring.

4) Regarding the IRB approvals in line 16-17, all authors who are in receipt of data need to have institutional approvals. The data are likely de-identified and would be labeled as "non human subjects".
5) 1471 participants completed the survey, however how many started the survey and closed it out without completing? Do the authors have this data?

6) Page 6, Line 20: What time frame is report of these symptoms referring to? I assume this is lifetime/ever have these symptoms? A value of 2.5 seems like quite a low number for average number of symptoms a woman had ever experienced in her lifetime. I wonder if the way the question was worded that the investigators aren't able to really ascertain the question.

7) Line 20 on page 8 says "No associations with meaningful effect sizes (i.e., larger than 0.1) were found between health conditions and internal use of wipes, external use of vaginal sprays, deodorant suppositories, internal use of body/hand creams, external use of liquid/gel sanitizers, and shaving creams." The participants were asked about lifetime health conditions and lifetime ever use of product which is difficult to report. What about a cross-tabulation in the past 30 days?

8) On page 10, line 9, was yeast infection diagnosis by self-report from clinician-diagnosis or self-diagnosis? (Ferris, Obstet Gynecol 2002).

9) The results section is long and mostly reiterated in the tables. I would suggest focusing on results of major interest in the text.

10) Table 2: Why didn't the authors utilize the participants who reported "used 3 months prior" in the main text? The authors only analyzed "ever used" in all of their correlation assessments?

11) Do the authors have data on participant smoking (not just fogging)? BV is highly associated with smoking.

12) Table 4: I understand the authors are from a psychology department and I'm not familiar with the methodologies used in the psychology literature. In traditional women's health epidemiologic studies, we generally present tables with % and sample size in each group and then the p-value for the chi2 statistic (not the actual chi2 statistic).

13) Did the authors build any multivariate models to control for confounding factors?
14) Page 16, line 18: I would suggest softening the statement that research has identified a causal relationship between douches and vaginal infections. To my knowledge, there has not been a large randomized controlled trial of douching initiation or douching cessation on BV/STI outcomes although my group and others have published several small and some compelling studies (Kurth, Grimley, Norris Turner, Brotman and Klebanoff et al.). There have also been a number of observational studies with various methodologies which all point to a strong association.

**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.

Yes

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

No

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I recommend additional statistical review

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