Reviewer's report

Title: Inadequate prenatal care and its association with adverse pregnancy outcomes: A comparison of indices

Version: 2 Date: 19 September 2007

Reviewer: Nancy Hessol

Reviewer's report:

General

The 4 objectives of this study were: to determine trends in prenatal care utilization in Winnipeg, Canada from 1991-2000; to compare 4 indices of prenatal care utilization in identifying the proportion of the population receiving inadequate prenatal care; to determine the association between inadequate prenatal care and adverse pregnancy outcomes using each of the 4 indices; and to determine the presence of gestational age bias among the 4 indices. Using population-based data on women and hospital-based singleton live births from 1991-2000, the authors calculated rates of inadequate prenatal care using the 4 indices, examined agreement between the indices, and used logistic regression to determine the association between inadequate prenatal care and adverse pregnancy outcomes. Then also determined whether the association between inadequate prenatal care and LBW or SGA differed by gestational age. The main conclusions were that the association between inadequate prenatal care and preterm birth and LBW varied depending on the index used for the analyses, with AORs ranging from 1.0 to 2.1. Variation was not seen when SGA was the pregnancy outcome, AOR 1.4. All indices demonstrated heterogeneity across gestational age strata. The authors conclude that the 4 indices cannot be used interchangeably and that they suffer from gestational age bias.

General comments: This is a well-written paper that is a contemporary spin-off of an earlier publication by Alexander and Kotelchuck comparing indices of the adequacy of prenatal care. Little research has been published using Canadian data for assessing prenatal care utilization and adverse prenatal outcomes, so this paper does a good job of filling that void. The main findings from this paper are not unique, others have published papers on similar topics, but the use of the Canadian data is novel. The paper would be greatly improved by paring down the aims and analyses and focusing on the most interesting aspects of the study and by supplying the reader with more details on some of the key parts of the methods. Specific suggestions are noted below.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. Page 5, first objective: what is the rationale for the trend analysis? Was there
some significant public policy change that warrants this investigation? I think this specific aim is superfluous to the main focus of the paper and should be removed.

2. Page 7, section 1: The Kessner index is old and hardly used anymore. I recommend eliminating this index from the comparative analyses.

3. Pages 7-9, methods section: For indices 3 and 4, you need to detail how women with missing data on PNV visit are categorized. In addition, the authors need to specify if they excluded or how they categorized women with missing indices in their analyses.

4. Page 9, second paragraph: the analysis of agreement between the various indices adds little to the paper and should be removed from both the methods and results.

5. Page 9, third paragraph, sentence on logistic regression: Your outcome is inadequate PNC but what is your reference group? On page 10 in the results section you say that you combined the inadequate care group with the no care group. Did you also combine the intensive, adequate, and intermediate groups together as a reference group? Either way, please specify. If you collapsed the intensive and intermediate group with the adequate group as the referent, this may be problematic as you are likely to dilute the unique characteristics of each of these indices. I would strongly recommend you only use the adequate group as the referent.

6. Results section: in the United States, race and ethnicity are strongly associated with pregnancy outcomes and utilization of prenatal care. There is no mention of race or ethnicity of this study population nor is any adjustment made for this factor in the analysis. Please explain why.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1. The pages are not numbered. I numbered my copy of the document starting with page 1 as the title page. My comments are base on this numbering scheme.

2. Page 3, Abstract, last sentence: the term “gestational age bias” is too vague and should be defined.

3. Page 6, second sentence: what was the population during the ten years of the study (1991-2000). Why give the statistic for 2001?

4. Page 14, second paragraph, first sentence: Avoid absolutes and replace the word “all” with “most”.

5. Figure 1: as mentioned under major comments, this trend analysis adds little to the paper and should be removed.

6. Table 1: please add the total sample size for each year. Also, please show the percent with missing indices.

7. Table 2: as mentioned under major comments, the analysis of agreement between the various indices adds little to the paper and should also be removed.
8. Table 5a-c: Please specify the reference groups for all the covariates (the PNC indices, maternal age, and parity). Were maternal age and parity kept as continuous or categorical covariates? If categorical, what was the reference group?

9. References: Several of the reference should be proofread. The last lines of references 1-3 have errors (Ref Type, Author). Also reference 4, JAMA should be all capital letters.

10. My version of the document had a duplicate figure 1.

Discretionary Revisions (which the author can choose to ignore)

**What next?:** Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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

**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.