Reviewer's report

Title: A Longitudinal Study of Maternal Prenatal Quality of Life: Can It Predict Preterm Birth and Low Birthweight?

Version: 2 Date: 11 February 2013

Reviewer: Antje Petersen

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The authors investigate quality of life (QoL) measured by the Duke Health Profile during and after pregnancy. Furthermore, they analyze whether QoL was associated with low birthweight and preterm birth. The research question was well defined and the methods appropriate. The authors found interesting results which are relevant and might be appropriate to improve fetal wellbeing.

Comments that should be answered:

Background, first paragraph: Please define preterm birth and low birth weight. Which definitions were used in the cited studies?

Background, third paragraph: Please tell us which studies “have investigated not only overall maternal QoL—which include the dimensions of physical, mental, and social health—throughout pregnancy and the postpartum period, but also the effect of QoL on maternal and birth outcomes.”

Maternal Social Health, second paragraph: “Despite the effect of maternal QoL on birth outcomes, few studies have examined the relationship of this factor…” The relationship of the QoL with which other factor was analyzed in the mentioned studies? Could you cite these studies?

Results, Sample Demographics: The presentation of the demographic data was included in the text. The reader might not only be interested in the relative but also absolute frequencies. Please, always present data as given in the following example: “The majority of the participants were primiparas (n=..., 56.1%),…”

Results, Differences on Quality of Life by Demographic Variables: “Primiparas had a lower score on general health.” The score for general health given in Table 1 does not correspond to this statement. It was 66.49±11.70 in primiparas compared to 62.15±14.77 in multiparas.

Results, Prediction of Newborn Preterm Birth and Low Birthweight: It is not clear, whether the coefficients in Table 2 are from an unadjusted model or a model that was adjusted for employment and happiness about pregnancy. In the methods section it was written that “demographic variables that showed differences on measured variables were controlled for in the generalized estimation equation analyses.” If I understand Table 2 correctly, the authors always adjusted for the variables that were found to be significant in Table 1. These variables can be
Results, Level of Quality of Life by Time: It makes sense to always present the dimensions of health in the same sequence in the tables as you did. Please present the data in text in the same sequence. This will make it easier to read the text.

Results, Correlation Between Dimensions of Quality of Life: “As shown in Table 3, general health, physical health, mental health, and social health at all data collection time periods were significantly intercorrelated.” Could you tell us in which direction they were correlated?

“In general, all dimensions of QoL during pregnancy had relatively lower relationships with all dimensions of QoL in the postpartum period except for the correlation between T1 physical health and T4 mental health.” What are your criteria for this statement? The correlation between these two variables is 0.27. Can you explain what a low or a high relationship means and how this can be seen in Table 3? Please give a hint that Table 3 can be found in the supporting information. Please include the correlation between T1 physical health and T4 mental health and p-value in parentheses at the end of the sentence.

Results, Prediction of Newborn Preterm Birth and Low Birthweight: “Therefore, in the regression analysis for preterm birth, parity was controlled for by entering in the first set, whereas variables measured at T1 were in the second set, variables at T2 in the third set, and variables at T3 in the fourth set. For low birthweight analysis, parity was not controlled for because it was not related to low birthweight.”

It is not clear whether the authors calculated 4 separate regression models or one model with an increasing number of variables. How were the covariates in Table 4 produced? Could you explain the results of the regression models in the text more extensively? Could you give an example which change in a QoL dimension leads to which increase in preterm birth and low birthweight?

Discussion, Maternal Physical Health, first paragraph: “Using a score of 50 as the cutoff point (DUKE scale score ranges 0-100) for poor/fair physical health or good/excellent physical health, we found that the rate of poor/fair physical health increased from 34.5% to 48.7% and to 57.4% at T1, T2, and T3, respectively.”

This is a nice example of how the DUKE can be interpreted and makes the results more clear. This is a study result that was not presented in the results section and should be previously mentioned there. The same may be applied for the following sentences:

Discussion, Maternal Physical Health, second paragraph: “Again, using a score of 50 as the cutoff point for poor/fair physical health or good/excellent physical health, we found the rate of poor/fair physical health was 22.0% at T4, a dramatic decrease from the women’s 57.4% rate at T3.”

Discussion, Maternal Mental Health, first paragraph: “The women in our study
had a median high score on mental health (mean scores ranged from 69.25–70.60), and the score did not change significantly throughout the women’s pregnancy and into their postpartum period. However, using a score of 50 as the cutoff point (DUKE scale score ranges 0-100), we found that 23%, 20.6%, and 26.9% of the women at T1, T2, and T3, respectively, perceived poor/fair mental health. At 1 month postpartum, 26% of the women perceived poor/fair mental health.”

Discussion, Maternal General Health : “Using a score of 50 as the cutoff point (DUKE scale score ranges 0-100) for poor/fair general health or good/excellent general health, the rate of poor/fair general health was 15.5%, 20.1%, 26.9%, and 21.0% at T1, T2, T3, and T4, respectively.”

Discussion, Predictors of Newborn Preterm Birth and Low Birthweight , second paragraph: “Because of this inconsistency, we conducted a further analysis and found that 40% of pregnant women who had a low mental health score at T3 (scored 0–25) gave birth prematurely. Additionally, the rate of women who gave birth prematurely was 2.1% for those who scored median low (scored 25.1–50), 6.8% for those who scored median high (scored 50.1–75), and 10.6% for those who scored high (scored 75.1–100), and the rate was significantly different by groups (X² = 9.86, p = .02). These results showed that, in fact, the pregnant women who perceived poorer mental health had a higher probability of giving birth prematurely.” Of course, this paragraph needs a different beginning when it is placed in the results section. I would suggest to restructure the last sentence to underline that woman with a very low score had a higher risk than women with a score of more than 25.

Conclusions, second paragraph: “Moreover, the maternal demographic variables of parity, employment, educational level, and happiness about pregnancy were factors related to prenatal QoL, whereas employment was a factor related to postpartum maternal QoL.” Could you repeat the direction of the association?

Table 3: I don’t understand the names of the columns in Table 3. Why are number 1, 11 and 16 missing?

Comments that may be answered:

Instruments, first paragraph: The authors give a good explanation of the measured scores of the DUKE. It would be interesting to present examples for some questions and answers in the DUKE to get a better impression how woman feel.

Results: The authors may include Table 1, Table 2 and Table 4 in the manuscript. Furthermore, it would be nice to have a figure presenting the QoL (mean +- SD) or poor/fair physical, mental, social and general health or good/excellent health as defined on page 12 at T1-T4 to illustrate the changes.

Tables: It is not easy to understand the structure of the tables at one glance. For example, it would be easier, if the subtitles were in bold characters.
Results, Sample Demographics, first and third paragraph: The gestational age was given as 27.34 weeks at recruitment and 38.16 weeks at birth. The reader might want to know how many days 0.34 weeks are. Could you present the gestational age in days or full weeks plus days of gestation?

Results, Differences on Quality of Life by Demographic Variables: “As shown in Table 1, at T1, unemployed participants scored lower on mental... Participants who had a higher educational level, and who were employed had better mental health than their counterparts.” The authors present twice that employed women had a better mental health.

Results, Level of Quality of Life by Time: I want to suggest to include the MD+SD and p-value in the text for the presented data as given in the following example: “Compared to general health at T1, participants had poorer general health at T3 (MD±SD: T1: 64.58±13.28 vs. T3: 61.71±15.05; p<.001)…”. This will assist the reader as he or she does not need to switch between the text and the tables.

Discussion, Maternal Physical Health, first paragraph: “The increase in pregnancy-related physical symptoms, especially symptoms that occur or become severe at late pregnancy, may explain these changes in the level of women’s perceived physical health throughout their pregnancy.”

This is a good explanation for the decrease in physical health that certainly every pregnant woman can support. Could you give a short example which symptoms you mean?

Regarding association between QoL and gestational age at birth not only the preterm birth is an interesting outcome. The early-term birth was also found to be associated with infant mortality and mortality in young adulthood [1, 2]. A Cox Regression might be used to analyze whether the investigated factors are associated with the gestational age at birth as a continuous variable [3, 4].


Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests.