Author's response to reviews

Title: The value of maternal anthropometric characteristics in predicting low birth weight and preterm birth in Sudanese newborn infants

Authors:

Eltahir M Elshibly (elshibly@hotmail.com)
Gerd Schmalisch (gerd.schmalisch@charite.de)

Version: 3 Date: 24 January 2008

Author's response to reviews: see over
Protocol of Review

The authors thank the reviewers for their critical and helpful comments and we do acknowledge their valuable suggestions that helped to improve the quality of our manuscript. We have done our best to revise the manuscript to meet all suggestions and hope that it will be to the satisfaction of the reviewers.

Reply to referee 1 (Prof. Hidemi Takimoto):

Major Points

1. According to the suggestion of the referee we have modified the title of the paper
The effect of maternal anthropometric characteristics and social factors on gestational age and birth weight in Sudanese newborn infants

The aim of the study was also changed in the abstract:
The aim of this study was to quantify the effect of maternal anthropometry, education and socio-economic status on gestational age and birth weight.

2. We agree with the referee that maternal characteristics measured after birth may be useless for prediction of preterm birth concerning the index delivery but they may point out to the fact that the mother is at risk of preterm delivery in the future. Furthermore, an important aim of the study was to identify maternal risk factors.

In contrast to developed countries with a well developed health care, in Africa maternal characteristics are commonly first recorded at delivery. For this reason the aim of this study was to investigate the effect of maternal characteristics on newborn characteristics, in particular the association between maternal anthropometry and low birth weight and preterm birth so that we can pick up at risk mothers and subject them to future special care.


MEDCALC (Belgium) is currently the best statistic software package to perform a ROC analysis and to define optimal cut-off values. This program was also used in this study.

The multivariate evaluation is frequently performed by logistic regression analysis. According the suggestion of referee 1 and 3 a logistic regression model was used to investigate the effect of maternal anthropometric parameters on the probability of preterm birth and LBW (see new section in the results).
4. As suggested Table 1 and 2 were combined to a single table.

5. The Pearson correlation coefficients between maternal anthropometry, birth weight and gestational age were shown in a new table (now Table 2).

6. The definition of the social classes used in this study were added in material and methods. The mothers were recruited from a large inner urban area of Khartoum with wide differences in the socio-economic status. The three social classes (low, middle, high) were determined by the area of residence.

7. The distribution of the social classes and the mean number of years of education were added to table 1 as suggested.

8. The term “little or no education” was specified by “education < 8 years”

9. We apologize for the misunderstanding. Of course we have investigated the effect of maternal characteristics on the gestational age and we found that except for a weak correlation with maternal height there was no statistically significant effect both in the univariate analysis and in the new multivariate analysis. This is clearly shown now in Table 2 as well as in the new section of logistic regression analysis and is also mentioned in the discussion.

10. We agree with the referee that the anthropometric measures of adolescent women are hardly comparable with the data of this study. Therefore Ref. 8 and the corresponding discussion was removed.

Minor Points

1. We apologize the printing error. The true resolution of the recorded birth weight was 10g. This was corrected in the text.

2. The printing error in table 1 was corrected.

3. 100-specificity is the standard x-axis of the ROC curve in this form the figures were also printed by the MEDCALC program.
Reply to referee 2 (Prof. Benjamin Longo-Mbenza):

We thank the referee for the favorable review.

Reply to referee 3 (Prof. Patricia HD Rondo):

1. We excluded mothers with diabetes mellitus because it has profound effect on the newborns especially on newborn weight and gestational age. The overwhelming majority of these mothers had very good antenatal care, very few of them may have had diseases which were appropriately dealt with.

2. We apologize the printing error. The true resolution of the recorded birth weight was 10g and was corrected in the text.

3. According to the suggestions of referee 1 and 3 we have added a multivariate analysis to the results. A multivariate regression analysis was performed to investigate the effect of maternal characteristics on the probability of preterm birth and low birth weight. The results were added in a new section

   The results of the multivariate analysis are in well agreement with the results of the univariate analysis. We could not build a statistically significant logistic regression model for the prediction of preterm birth, however, we found a statistically significant logistic regression model to predict LBW. The model reduction by the backward selection method showed that the only statistically significant predictor was the maternal height (p=0.003). This agrees well with results of Fig. 1. To prevent any confusion with the calculated relative risks, the odds-ratios of the logistic regression model were not presented, because, the results of the odds-ratios were very similar with the relative risks shown in Fig. 1.

4. We agree with the referee that the effect of different maternal characteristics on newborns was already investigated by several studies. However this is the first comprehensive study in Sudanese women. This was emphasized in the text.

   No such comprehensive study was performed before in Sudan.
5. To prevent any confusion with the different statistical tests used in this study we have reduced the description in the abstract on the two characteristic methods, 

*The effect of these maternal variables on preterm delivery and birth weight was investigated by receiver operating characteristic (ROC) curves and by multivariate logistic regression analysis.*

6. We have described in all tables the statistical test used.