

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Developing and validating risk prediction model for preterm birth at Felege Hiwot comprehensive specialized hospital, Northwest Ethiopia: A retrospective follow-up study
AUTHORS	Feleke, Sefineh; Anteneh, Zelalem; Wassie, Gizachew; Yalew, Anteneh; Mengist, Anteneh

VERSION 1 – REVIEW

REVIEWER	Achenef Asmamaw Muche University of Gondar, Epidemiology and Biostatistics
REVIEW RETURNED	15-Mar-2022

GENERAL COMMENTS	<p>This paper presents important information that adds to the knowledge pool on the risk prediction model for preterm. The paper is well written, with a clear text, easy to read. However, I have comments to be addressed stated as follows:</p> <p>Title: Developing and validating a risk score for prediction of preterm birth at Felege Hiwot Comprehensive Specialized Hospital, Northwest, Ethiopia: Retrospective follow up study, 2021 I propose that the title be changed to "Developing and validating a risk prediction models for preterm birth." Simply remove the phrase "risk score."</p> <p>Abstract: 1. March 1–30, 2021? needs to be revised due to the length or duration of the records 2. Shortly describe the sample size, as well as the sampling technique and population under study. 3. As authors conclude that these findings suggest that a simple prediction model built from maternal characteristics could be used to predict preterm birth. However, the authors limited it to specific maternal characteristics may not have broad scope range recommendation as stated.</p> <p>Background: 1. Authors must clearly identify existing preterm risk prediction models on preterm, as well as their weaknesses and strengths, as well as what differentiates their approaches. Is there any argument that the primary drawback of what is currently known is that it is not being used. That is, there are accurate risk prediction models out there but they are not being used. With that, it's not clear why we need new models. Hence, I recommend adding more literature reviews described in the background section are required to highlight the core problem of RPM on preterm authors intend to address. 2. There is a risk prediction model for preterm which has been used for years. In your justification indicate that the model authors are developing will have improved prediction and how we are using the</p>
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	<p>Ethiopian settings.</p> <p>3. There is a risk prediction model for preterm birth that has been used for years. In the justification part, authors should indicate that the RPM developing will have improved prediction and how we are using the Ethiopian settings.</p> <p>Methods:</p> <p>1. Page 4 line 25-52: some study setting description are irrelevant with RPM for preterm.eg. ‘...established with the German State government during the regime of Emperor H/ Selassie I in April 1963 G.C ...’ , “ become a center of medical service Excellency by 2029’ , and many more. I suggested rewrote by focusing preterm or neonatal care.</p> <p>2. Due to think the sub section “Patient and public involvement” appropriate place here. Please check the BMJ open submission guideline.</p> <p>3. Curiosity question: as your intention to identify “Being preterm”, the unit of analysis is expected “still and live birth” so what will be the study population? Had you extracted a data from newborns chart? I was confused “ To be included in this study, mothers must meet all of the following eligibility criteria; All medical records of mothers who gave birth and had at least one ANC follow-up in FHCSH from January 30/2019 to January 30/2021”</p> <p>4. There is a repetition on “January 30/2019 to January 30/2021” even there error “20201” (line 31) in the year. Moreover, I suggest being focused the years of medical recorded included in the extraction eg, a 3 year, 1 year ...retrospective data from xxxx to xxxx than the data extraction time. The retrospective follow-up duration is more scientifically sound than the data collection period.</p> <p>5. Page 5, line 54-55: More explanation is needs early ultrasound result? Good to specify the exact GA eg. before 12 weeks of GA.</p> <p>6. Page 6, line 1-12: I am worried for some of predictors biological feasibility with preterm. Eg. Residence.</p> <p>7. Page 6 line 22-23: “After that, some adjustments were done accordingly”. What are the adjustment authors did it?</p> <p>8. Page 6 line 29-35: “There were 13(1%), 2(0.2 %), 11 (0.9 %),15 (2.5%), 21 (1.7%) ,29(2.3%), 20(1.6%) and 20 (1.6%) missing values for premature rupture of membranes , residence, chronic hypertension, multiple pregnancy gestational diabetes Mellitus, pregnancy-induced hypertension ,antepartum hemorrhage and hemoglobin respectively”. This should describe shortly in the approach of missing data management in the method part and the findings i.e 13(1%) in the result section. With similar approach about multiple imputations.</p> <p>9. How did authors regarding the validation part of the study? What about the external validation? May be your future recommendation</p> <p>10. From a methodologic perspective, a wide range of methods and approaches are described. This is both a strength and a limitation. I am concerned bootstrap for the validation seems superfluous (just a curiosity question) and why not using 30/70 split. Moreover, the regression part I recommend the LASSO rather than employing stepwise procedure.</p> <p>Result:</p> <p>1. Page 9 line 9 -25 need shortly describe then cite Table 2. There are over presentation of descriptive findings here.</p> <p>2. “Variables with $P \leq 0.25$ in the bivariable logistic regression analysis” there is a repetition with method part. Please avoid repetition already stated in method section while you write the result section.</p> <p>3. “When dichotomized to low risk (<3) and high risk (≥ 3) based on</p>
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	<p>the risk score” how do authors get this threshold 3?</p> <p>4. Figure 1 b needs the calibration plot with color shade, and we can understand more the calibration plot direction. It also good if you add the P value on the left upper position.</p> <p>5. Really the title of figure and tables the duration “January 30/2019 to January 30/2021” should be changed the exact charts included from time of there addition to January 30/2021. Just focus on the chart record duration then your data extraction.</p> <p>6. I recommend authors stating the model performance with individual predictors and in combined form then present in table.</p> <p>Discussion:</p> <p>1. In the discussion, the authors presented only 5 citations, the majority of which were not related to RPM. As a result, it's a good idea to use more evidence to support your discussion in line with RPM. In addition, I recommend including the implication for each main finding based on RPM.</p> <p>2. Limitation: It is important to recognize that the disadvantages of chart review, as well as all potential predictors and data, may not have been included in RPM. This is a significant limitation of the research.</p> <p>Funding statement: This work was supported by Bahir Dar University grant number (2500ETB). This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors ??? Is Bahirdar University is not Public Sector? Controversial message? 2500ETB???</p> <p>It is also good to check the grammar, syntax and language errors.</p> <p>Thank you.</p>
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REVIEWER	Yitayeh Belsti University of Gondar College of Medicine and Health Sciences
REVIEW RETURNED	16-Apr-2022

GENERAL COMMENTS	<p>Thank you for conducting this interesting paper as an input for academic world</p> <p>Here is my minor comment to modify the title:</p> <p>1. Title: In prognostic studies, development and validation is given for those studies who are going to develop and externally validate the models.</p> <p>However, if you are going to develop the model only you have to use the term “Development of risk score to predict preterm birth.....”</p>
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VERSION 1 – AUTHOR RESPONSE

Author’s response

Firstly, I would like to say thank you very much, for providing constructive comments. Saying to this I will proceed to give a response to questions.

Methods

3. The study populations were all medical records of mothers who gave live birth not including stillbirth (A baby who dies after 28 weeks of pregnancy, but before or during birth, is classified as a stillbirth).

6. There is an association between residence and preterm birth. Different studies showed being in rural resident are at risk for preterm birth. This may be women who are resided in rural areas are more likely to be exposed to hard physical works like farming which increases the risk of preterm delivery.

7. After reviewing 15 charts some adjustments (removing variables that were not available in medical record of mothers) were done accordingly.

9. Regarding on external validation, we recommend doing further research to validate the prediction tool using prospective follow-up studies in another context before introducing it to the clinical and public health practices.

10. We used bootstrapping for internal validation. Bootstrapping is preferred over split-sample or cross-validation as an internal validation tool as it is more efficient; bootstrapping uses all patient data for model development and for the model validation. Importantly, all steps in the model's development, including decisions on the transformation, clustering, and re-coding of variables as well as on the selection of variables (both in the univariable and multivariable analysis) can and should be redone in every bootstrap sample [Harrell, 2001; Steyerberg et al., 2003].

Result

3. Using "SpEqualSe", the suggested threshold score to predict preterm birth using risk scores is ≥ 3 with a sensitivity of 75.14 % and specificity of 67.46%.

VERSION 2 – REVIEW

REVIEWER	Achenef Asmamaw Muche University of Gondar, Epidemiology and Biostatistics
REVIEW RETURNED	05-Aug-2022
GENERAL COMMENTS	The reviewer completed the checklist but made no further comments.