

Joint Modeling of Hypertension Measurements and Time-to-Onset of Preeclampsia Among Pregnant Women Attending Antenatal Care Service at Arerti Primary Hospital, North Shoa, Ethiopia

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Research

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Abstract

Background: Preeclampsia is a hypertensive disorder of pregnancy that affects 2-8% of pregnant women. It is the major cause of maternal and perinatal morbidity and mortality worldwide. The purpose of this study was to identify factors associated with hypertension measurements and time-to-onset of preeclampsia among pregnant women attending antenatal care service at Arerti Primary Hospital.

Methodology: A retrospective longitudinal study design was employed on a total of 201 pregnant women attending the antenatal clinic of Arerti Primary Hospital between September 2018 and June 2019. A closed-form sample size formula for estimating the effect of the longitudinal data on time-to-event was used. To analyze our data we employed descriptive method, linear mixed effect model, Cox-PH model and joint models for longitudinal and survival outcomes. Relevant demographic and clinical covariates were included in submodels. Results: This study revealed that baseline age, visiting times, weight, diabetes, history of PE and parity had significantly associated with mean change in the BP measurements. From the Cox model result, age, weight, history of PE and marital status were associated with a significant hazard of developing preeclampsia. The univariate joint models reveal that the each longitudinal BP measurements are significantly associated with hazard of developing preeclampsia. Form the bi-ariate joint model; only DBP is significantly associated with risk of developing PE.

Conclusion: As the result obtained in this study, we summarized that, age, weight, history of PE and marital status had a significant effect on time to developing preeclampsia. Furthermore, due to significance of association between the longitudinal BP measurements and time to onset of preeclampsia, joint model analysis was suggested as it incorporates all information simultaneously and provides valid and efficient inferences over separate models analysis.

Full Text

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