

**AGE-BASED INVESTIGATION OF COVID-19 PREVALENCE IN
ETHIOPIA USING MATHEMATICAL MODELLING**

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Abstract: In December 2019, the newest infection, named novel coronavirus COVID-19, appeared, and it became a challenge to the world. In this paper, we investigated a mathematical model that explains the transmission of COVID-19 with the help of ordinary differential equations. Here, we divided the entire model into eight different compartments, namely $SEI_1I_2I_3QHR$ model based on three different age groups. Equilibrium analysis with positivity and boundedness are also investigated. The reproduction number is analyzed using Vandedressche's next-generation matrix. Stability analysis for disease-free equilibrium (DFE) is studied. We have taken some basic parameters with their primary conditions from the Ethiopian Ministry of Health Institute from 29 February 2021 to 07 June 2021.