The effect of the awareness and treatment on HIV spread in developing and developed countries

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ABSTRACT

In this study, we analyze a mathematical epidemic model and check the status of HIV in the USA and Pakistan. We estimated some parameters by using the maximum likelihood method and fitted the model with recent data in both countries. With this estimation, we observe that the basic reproduction number in the USA is 0.9688, while our estimation for Pakistan for the basic reproduction number is 2.2599. In the case of the USA, with this reproduction rate disease will die out but it would take a long time to eradicate this disease completely. Meanwhile, in Pakistan, due to a lack of awareness in the confirmed group and a lower rate of maintained treatment, this reproduction number is very high. For both countries, we estimated the rate of vertical transmission, which plays a significant role in Pakistan but not in the USA. We Noticed that improving the screening and treatment rate with educating people would be effective for controlling HIV in Pakistan, whereas an improved screening rate in the USA can eradicate HIV faster.

REFERENCES

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