Statistical Models to Analyze the SARS-Cov2 Spreading in Europe

Cristina Gena DASCĂLU[a*], **Mihaela MOSCALU**[a], **and Magda Ecaterina ANTOHE**[b]

[a] Medical Informatics and Biostatistics Department, Faculty of Medicine, ”Grigore T. Popa” University of Medicine and Pharmacy, Universitatii Str., no. 16, Iași, 700115, Romania
[b] Dental Prosthetics and Technology Department, Faculty of Dental Medicine, ”Grigore T. Popa” University of Medicine and Pharmacy, Universitatii str., no. 16, Iași, 700115, Romania
E-mails: cdascalu_info@yahoo.com; moscalu.mihaela@gmail.com; magda.antohe@yahoo.com

* Author to whom correspondence should be addressed

Abstract

The SARS-Cov2 pandemic is a major challenge for the nowadays medicine and raises major issues, through the severity of symptoms, the high degree of contagion and the speed of spread. Since the onset of the pandemic, several mathematical models have been proposed to make epidemiological predictions and projections - SEIR / SIR, Agent-based and Curve fitting / Extrapolation models, but their practical utility has proved to be relatively limited due to the high complexity of the analyzed phenomenon. We aimed in this paper to make a short review of such models, with their advantages and drawbacks, and also to present the current situation of cases evolution in Europe, in order to highlight similarities and dissimilarities between countries. Our analysis uses the data reported by www.worldometers.info – the diagrams with the daily number of new cases, recorded by countries. An empirical comparison between these diagrams reveals certain facts: the situation in Italy is similar with those from Spain, France and Germany; other similarities can be observed between UK and Portugal; Belgium and Switzerland; Poland, Czech Republic, Slovakia and Rep. of Moldavia; Romania, Bulgaria, Hungary and Greece. From a general point of view, a few conclusions can be noted: regardless the strategies applied at the country level, the successes reported in the pandemic control were only temporary; in the Nordic countries, the evolution of the pandemic has been milder and the general evolution of the disease rate was equally unfavorable in all European countries, the differences being given only by the time gaps; therefore, the local policies and restrictions for pandemic control had a limited efficiency.

Keywords: SARS-Cov2; Spreading; Similarities; Modelling

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