Why we need more tests to understand COVID-19

It is impossible to test all citizens every day, but what we can do is extrapolate. As an example of how to do things, we have South Korea, a country where not only the citizens with symptoms were scrutinized, but also a set of the population representing the entire citizenry of the country. From now on, Spain will do something similar.

In order to take appropriate action, government bodies would need to have an updated and current map of the state-of-play of COVID-19 in the citizenry. Image by Gerd Altmann from Pixabay

The Director General of the World Health Organization, Tedros Adhanom Ghebreyesus, has recommended that all countries tackle the coronavirus with three strong words: "test, test, test". Not everyone understands that the health system is governed by a statistical science. Its aim is not to give the best possible care to each patient, but rather, as resources are limited, its aim is to give the best possible care to all patients. This implies that sometimes individual patients will receive less optimal treatment in order to optimize the management of resources used for all.

Although understanding the mechanisms of the disease in each individual is important, it is more important to understand how the disease affects the whole of the population. It is not so important to know how a particular individual has fallen ill, but rather to know how the whole of the citizenry is falling ill.

In order to take appropriate action, government bodies would need to have an updated and current map of the state-of-play of COVID-19 in the citizenry. The problem is that the amount of resources we have is limited. To map the coronavirus, we should test all citizens every day. That is the only real way to know the status of the disease with certainty.

It is clear that this is not possible since we do not have the resources to do it. So, we turn to the second-best thing we can do, which is to extrapolate the data. Extrapolation is the process by which a function assumes data that are not known from those that are known. In this case, we can measure a small data set and make a hypothesis about the larger set. In practice, this means testing a part of the population and using this data to propose hypotheses about how the whole population is doing.

Random set of the population

In order to know how the disease evolves, spreads and affects all patients, we need to test a randomized set of patients. Let’s see what has happened in Spain. First, only people who went to a health center or hospital because they had certain symptoms were tested. This makes the sample no longer relevant over the whole population because only the subset of people who were already showing symptoms were tested.

Spain then decided to stop testing and assume that all people with similar symptoms had COVID-19. Although this is quicker, it may be that people with similar symptoms are treated as if they had
COVID-19, increasing the uncertainty over the official data by having fewer samples.

The example of South Korea

As an example of how to do things, we have South Korea, a country where not only the citizens with symptoms were scrutinized, but also a set of the population representing the entire citizenry of the country. What they found was that both young and old had coronaviruses almost equally, although the older ones showed the most symptoms.

From a population of 51 million, a quarter of a million, or 3,600 people per million, were tested, not only in hospitals, but also in drive-throughs, where those tested did not even have to get out of their car. The test took 15 minutes to conduct. These tests allowed South Korea to understand, for example, that it is not that the elderly are more likely to catch it, but that they, being immunologically weaker, show more symptoms.

Spain's turn

Spain is going to start doing this kind of test from now on. On Saturday the first data were presented, but we need to have them updated and in greater numbers so that we can know better how we are doing.

It is very important that each country makes this study, because the culture of proximity, the population pyramid, living habits, etc., affect how the same virus spreads through society. And that is the reason for the insistence of the World Health Organization. We need more data in order to analyze them and to be able to understand them. We need “test, test, test”.

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