THE IMPORTANT OF SOCIAL ISOLATION DURING THE COVID-19 PANDEMIC IN THREE GRAPHS

Foreword and disclaimer

I am not an epidemiologist, not even a medical doctor or health professional. I am just a scientist (PhD in Chemistry and over 20 years of experience in medicinal chemistry-related research) and, more importantly, a concerned citizen.

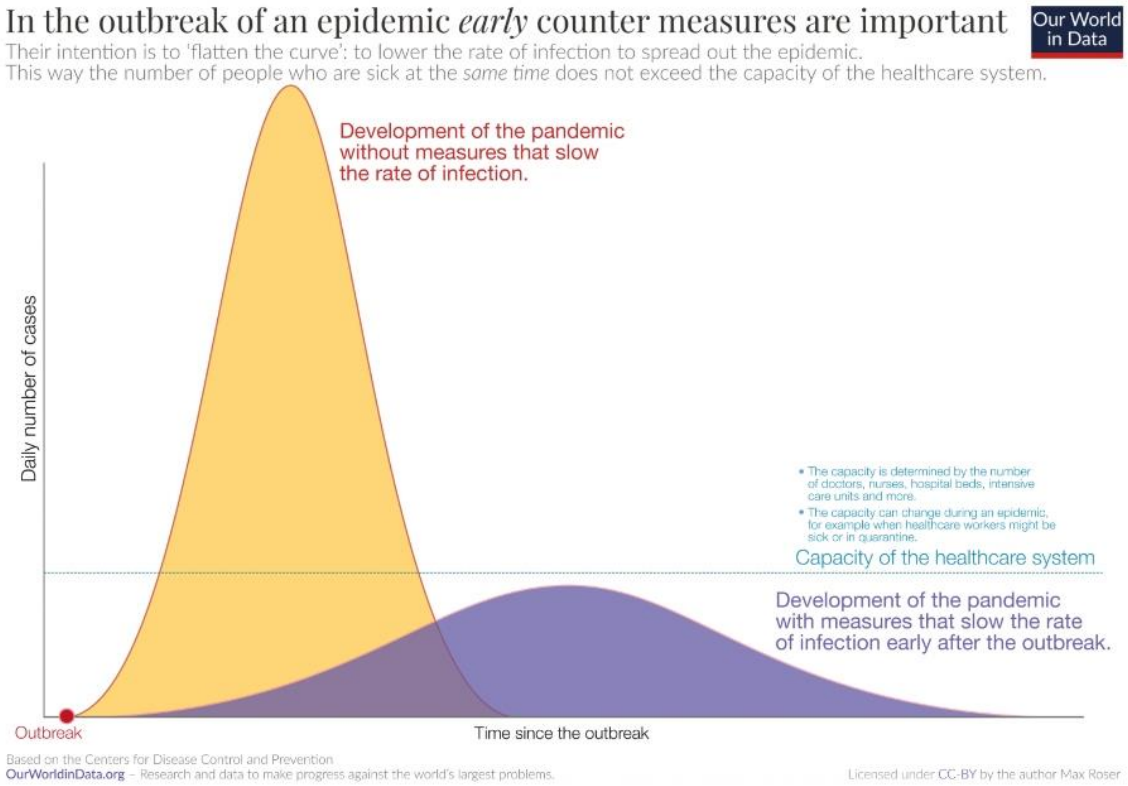
What I mean to say is that my opinion on this matter does not carry more weight than anyone else's and that it should be taken with a pinch of salt.

I am at work, and so are most of my colleagues. I cannot avoid overhearing conversations questioning, and even making jokes about, the utility of social isolation for the control of the current COVID-19 pandemic. I have therefore decided to share my opinion on this matter.

Quality of the health system

The data shows very clearly that, in the countries with a high-quality universal health systems who have taken early measures in order to control the pandemic, COVID-19-associated morbidity is significantly lower than it is in countries that either lack universal health systems or that have not taken preventive measures (data not shown).

The figure bellow (source WHO) explains why. In a non-isolation scenario (yellow Gaussian curve) the epidemy progresses to quickly for the health systems to cope with it. As a consequence, the number of patients that do not receive appropriate care peaks very quickly, and so does morbidity.



Social isolation causes the epidemy to progress more slowly, which, in turn, gives a better change for the health system for providing adequate care to the affected population (purple Gaussian).

Certain people accurately point out that in such scenario the pandemic will last longer, and therefore the risk of contagion. However, the data show that mortality ratios are much lower in the second scenario (and marginal outside of the risk groups).

Herd immunity

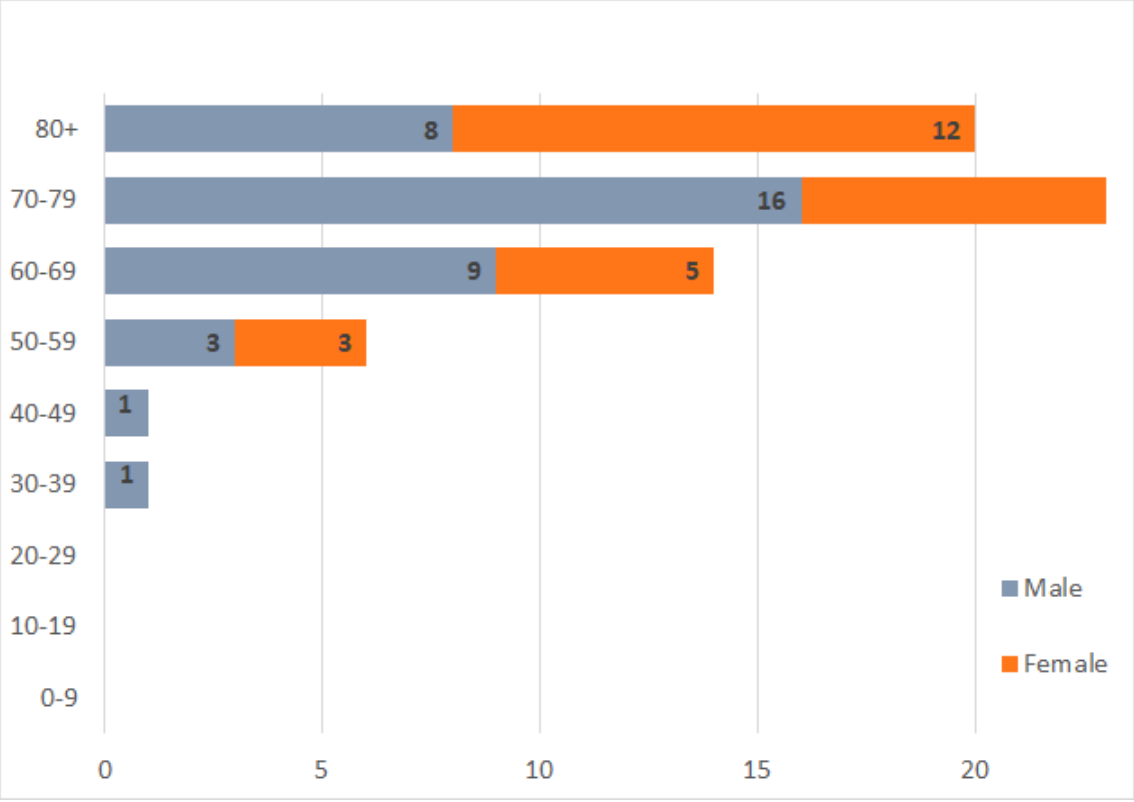
Given that there is currently no treatment of vaccine for this particular virus, the only way to stop its progression is by acquiring natural immunity. It is estimated that in order to stop an epidemy of this kind, 60—70 % of the population need to become immune. This is what is referred to as “herd” or group immunity.

In fact, the areas of the yellow and purple curves in the previous graph should be roughly similar, for they represent the percentage of the population that will have been infected by the end of the pandemic. Now the question is, if the same number of people are going to be infected, what is the point of prolonging the duration of the epidemy by means of isolation?

Again, the answer lies on the ability of the health system at any given time to provide adequate care to the affected patients. Namely those most at risk.

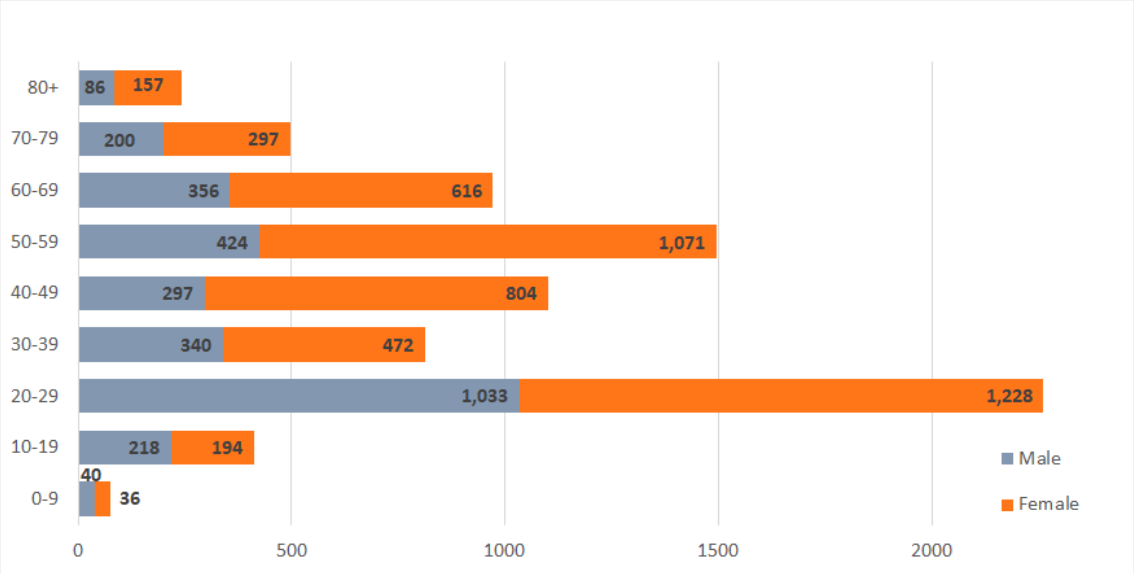
Risk groups and vectors

The data shows clearly that the elderly show, by far, the higher mortality ratios. They are, therefore, the ones requiring more attention and protection.



The figure above is taken from the South Korean Centers for Disease Control and Prevention (KCDC).[1] Korea is currently the source of the most accurate epidemiological data because so far they have tested more people than any other country (currently over a quarter million people).

However, when it comes to infected people, it turns out that the most infected fraction is, by far, young people between the ages of 20 and 29 (see graph below).[1]



This is absolute data and therefore it somehow biased in terms of the demographical pyramid (let's take into account, however, that the Korean is an aged population with most people being middle-aged). Also, college students may be more likely to get infected and/or to be tested.

In spite of this bias, it is clear people with no or mild symptoms are acting as contagion vectors for high-risk groups.

Conclusions

When it comes to social isolation (lockdown, teleworking, etc) priority should be given to high-risk groups (the elderly, people with pulmonary and coronary diseases, etc) and those share a home with high-risk individuals.

1 https://www.cdc.go.kr/board/board.es?mid=a30402000000&bid=0030&act=view&list_no=366537