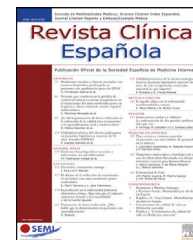




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SPECIAL ARTICLE

Medicine, epidemiology, and humanism before and after COVID-19[☆]



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Abstract The rapid spread of SARS-CoV-2 requires evidence to help mitigate its global harm. Generating accurate measurements of the appropriate clinical and epidemiological indicators associated with COVID-19 is a necessary step in reducing the current pandemic's burden on individuals and the population at large. These unprecedented times have presented a challenge to chronic disease epidemiologists and have required a practical approach "to do something to help during this disaster". Options include returning to clinical care or resorting to online textbooks and resources for crash courses on outbreak research. However, being aware of the magnitude of individual suffering endured by so many, including many esteemed and close colleagues, becomes a personal challenge of enormous proportions. It is envisaged that the arts and other humanities can help re-establish balance, both during the pandemic and especially after it.

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PALABRAS CLAVE

COVID-19;
Epidemiología;
Humanismo;
Resiliencia

Medicina, Epidemiología y Humanismo antes y después de la COVID-19

Resumen La rápida propagación del SARS-CoV-2 requiere la generación de evidencia para ayudar a mitigar su daño global. La medición precisa con los indicadores clínicos y epidemiológicos apropiados asociados con COVID-19 es un paso necesario para reducir la carga individual y poblacional de la pandemia en curso. Estos tiempos sin precedentes han planteado un desafío para los epidemiólogos de enfermedades crónicas, y requirió de un enfoque práctico «para hacer algo para ayudar durante este desastre». Las opciones incluían regresar a la clínica asistencial

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o recurrir a libros de texto y recursos en línea para un curso acelerado sobre investigación de brotes. Sin embargo, ser consciente de la magnitud del sufrimiento individual soportado por tantos, incluyendo muchos colegas estimados y cercanos, se erige como un desafío personal de enormes proporciones. Se prevé que las artes y otras formas de Humanidades pueden ayudar a restablecer el equilibrio, tanto durante la pandemia, como especialmente después.

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Gabriel García Márquez, the Colombian novelist and Nobel prize winner, suffered from cholera and many bouts of malaria during his life. In *Love in the Time of Cholera*, one of his many masterpieces, he wrote that persistence (and hand washing!) rewarded the protagonist, Florentino Ariza, with the love of Fermina Daza after living a life with innumerable cholera outbreaks.

I remember how nervous I was in the presence of my first patient, somewhere around my third year of medical school, during a voluntary on-call night shift at the Vall d'Hebron Hospital Emergency Department in 1982: he was a 42-year-old man with bilateral atypical pneumonia. My Attending told me, "Congratulations. You got the diagnosis right. Does anything else about this patient surprise you?". I answered that on the complete blood count, he had zero lymphocytes and that he had a tattoo of an asterisk on the anatomical snuff box of his left hand. My Attending nodded, "Yes, he's a heroin addict with severe immunodeficiency that will kill him within 24h. There's nothing we can do." I think that more than half of the patients I saw during medical school were HIV/AIDS patients. Fortunately, nowadays, all of this type of patients are cured.

I am a respiratory epidemiologist and during the peak of the COVID-19 pandemic, we were literally bombarded with descriptive epidemiology statistics and other figures that were as precise as they were cold: "To date, the number of deaths due to COVID-19 worldwide is 165,656." "It is hoped that the maximum requirement for ventilators and ICU beds in the USA will occur on April 14, 2020..." and so on.

In the past, there have been devastating epidemics of other diseases: cholera, the 1918 flu (wrongly named the "Spanish flu"), the black death, AIDS, and more. Other more recent outbreaks, such as SARS, MERS, or Ebola, were considered exotic, far-away events. But no, we were not prepared for this. Considering at least the last four generations, we are certain that we are now living in unprecedented times.

Nobody, not even in the most terrible nightmare of a Hollywood sci-fi screenwriter, could have anticipated that 2020 would begin with such drama and suffering. When we were raising our glasses on New Year's Eve to toast the new year, few were aware of a health alert reported that morning in Wuhan, Hubei province (China) due to a cluster of pneumonia cases of unknown etiology.¹

Just ten days later, on January 9, 2020, the Chinese CDC reported that a novel coronavirus was the causative agent of

this local outbreak. For better or for worse, the entire world is globally interconnected. Thus, this incident in China is the reason why we are living in confinement; why basic civil liberties are curtailed; why so many deaths and suffering have occurred; and why, locally, my hospital has been on the verge of collapse.

La Princesa Hospital, an old, 450-bed tertiary referral hospital in Madrid's Salamanca neighborhood, had its D-Day on March 30, 2020, when a total of 552 COVID-19 patients were hospitalized and another 120 patients were in the Emergency Department, impatiently awaiting admission.² Many of the two-bed rooms already had three, even four occupants. We had to expand our cozy but modern ICU ward from 17 to 73 beds, with the invasion of two operating theaters as well as the entire Psychiatry floor repurposed into intensive care wards.

Harkening back to past times, we had to send all patients with mental illness home with their family members—even those with active episodes of severe paranoid schizophrenia or major depression—to make room for other patients who required invasive mechanical ventilation, mostly with ventilators improvised through the reuse of disposable items or doubled-up on equipment modified with rudimentary technology. Even some friends who are veteran volunteers with *Doctors Without Borders* in the Syrian civil war or in the Ebola zone of Sierra Leone were not prepared.

Using military terminology, La Princesa was a war hospital on the front lines of the battle. My Pulmonology Department, with 13 senior pneumologists plus 8 residents, had 11 "losses," including quarantines, infections, and hospitalization with severe bilateral pneumonia. However, in other Madrid hospitals, the blow was even bigger: colleagues from La Paz Hospital or Gregorio Marañón were experiencing an even worse avalanche of patients. A true modern-day hecatomb, from the Ancient Greek ἑκατόν, *hekatón*, or "hundred" and βούς, or "oxen" a religious sacrifice of one hundred oxen to indicate a great catastrophe with high mortality or the end of the world.

We are still facing a cruel disease and a worldwide epidemic of biblical proportions.³ It is still severely affecting our elderly and those with heart, lung, or other chronic diseases. But not just them. Several of my colleagues—young, completely healthy, athletic even—have had to be hospitalized in the same ward where they were seeing patients the day before; two friends have been in the intensive care unit with tracheotomies, fighting for their lives. Why? We still do not know if an immunological, a genetic, or a combination

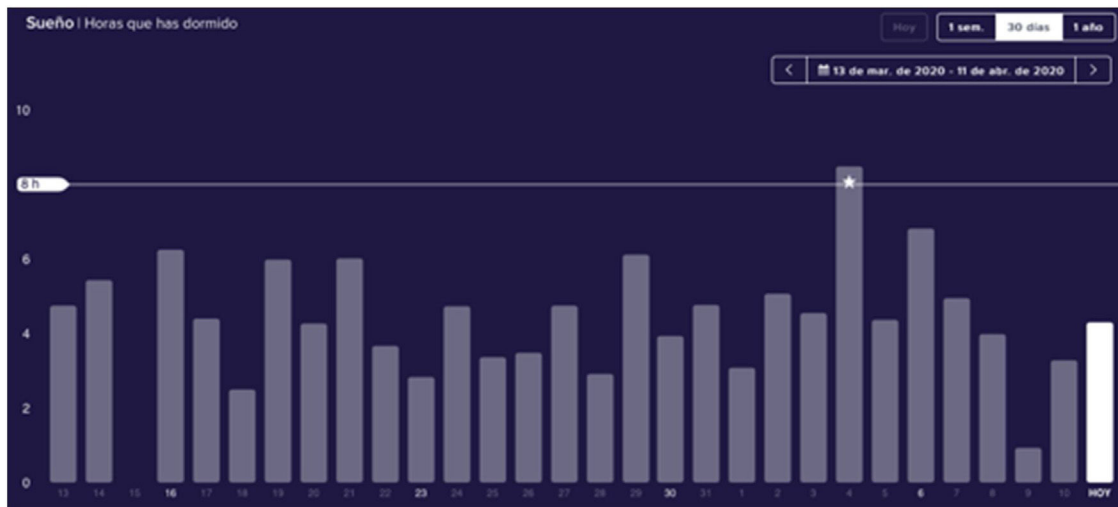


Figure 1 Sleep pattern of a physician during the COVID-19 outbreak in the La Princesa University Hospital, from March 13 to April 11, 2020, by Fitbit, with permission (<https://www.fitbit.com/sleep>).

of risk factors or serendipity make it so that this small RNA virus collapses the bronchi and lungs with a thick “mucus or snail slime” accompanied by an inflammatory cascade that kills previously healthy people.

As Dr. Landete explained to the junior residents during morning rounds, “This is the first time that I have seen the onset of acute respiratory distress syndrome (ARDS) before my eyes. In the Emergency Department, I was examining a 52-year-old patient with fever, malaise, and a dry cough and in 20 minutes, I had to call an ENT colleague to intubate her; she had developed the fastest and severest ARDS I have ever seen.” Despite all their efforts and the fact she was in best hands, they could not save her. It really is a very nasty bug.^{4,5}

Nevertheless, there is always hope, and as can be seen in great literature, times of crisis bring out the best in all. I have seen residents choose to stay longer after being on-call for 24 h to try to save another critical patient; nursing aides improvising gowns and shoes out of trash bags who, after finally receiving their space suits, posed for posterity like a soccer team, always smiling; neurology, immunology, or pathology residents who transformed themselves into pulmonology residents; medical students who volunteered to learn practical aspects of mechanical ventilation and gas exchange; a department chief who created a blog aimed at recognizing people for their outstanding bravery and commitment. I have had the privilege of coordinating a small think tank group that includes physicians, physicists, engineers, and other friends who, since Saturday, March 14, video conference at 7:00 a.m., just before seeing patients or waking up their families, have met daily to brainstorm.

Several of the professionals I have mentioned have been living in hotels next to our hospital for two or more weeks, with sleep deprivation for a month already (Fig. 1). Our medical direction recommended all personnel not to take weekends or days off until further notice. Nobody out of a staff of more than two thousand employees questioned it, not even the unions. And this has been going on for almost a month. Once again, all with a wide smile. It is what is known as the *spirit of La Princesa*.

I myself, a humble respiratory epidemiologist who has devoted his professional life to research on COPD, asthma, and tobacco, had to turn to textbooks and online resources for a quick and practical immersion on infectious disease clinical practice and epidemiology and take a crash course on outbreak research: death counts, cases of infection, R0 reproduction numbers, and the like.⁶ That was the easy part. Realizing that behind every number was a personal tragedy, a loss of a family member, little by little broke my heart and my lungs. There have been so many people who have died alone in their homes and elderly people who have died in nursing homes, without medical care, without any assistance, without anyone looking after them. I imagine that many had nobody holding their hands. In the interest of hygiene and other priorities, there was nobody available to say a prayer for them while they were buried or cremated alone. It will take some time to accept these deaths, such a cruel end for so many.

We must live on this planet. There is no other Earth or planet/plan B. And we have observed that air pollution and the health of the planet can improve in weeks with concerted individual and societal efforts.⁷ Children confined to their homes, for six weeks now, have valued playing with their brothers and sisters or chatting with their neighbors from balconies, even talking online with their friends and school teachers. They must be the first to be let out of confinement.

And we need to learn lessons from history. This is not our first epidemic. This is the price we have to pay for living in society and in cities. If we were still hunter-gatherers in nature, this would not have happened. However, humans are social animals and, beyond our *Homo sapiens* species, experts say we are of a subspecies called *emotionalis*. Human animals are not meant to live alone or to die alone or in solitude (Fig. 2).

I have no doubt that when this crisis is over, music, theater, cinema, literature, and the arts in general will help re-establish balance and that we will all be wiser, better people.⁸ The so-called movement from omics to humanomics.^{9,10}



Figure 2 Loneliness.

Beyond modern medicine, ever more technical and robotic, medical humanism in the 21st century will be more important than ever.¹¹ Pangloss, the optimistic tutor of Candide in the Voltaire's work of the same name, pontificated, "Everything happens for a reason." And Pangloss insisted to his pupil, "Everything happens for a reason and this is the best of all possible worlds," while poor Candide suffered a life full of calamities, which illustrates that Pangloss' syllogism was evidently false.

But there is no room for pessimism. I remember having read *Essay on Blindness*, by the Portuguese author José Saramago; happily, the generalized panic and selfishness in his outbreak of sudden blindness only occurred in literature. Imagine if Gabo would be able to be inspired by today's COVID-19 pandemic; he might rewrite his *Love in the Time of Cholera*.

More must-reads: *The Plague*, by French novelist Albert Camus, who died in a car crash near Sens at the young age of 46. Camus, who was not wearing a seatbelt and was sitting in the passenger's seat, died instantly. But what a life he lived—so intense! *The Plague* tells the story of a plague that threatens the Franco-Algerian city of Oran. However, it is not a medical book, but rather a book about human passions during and after an outbreak. I cannot wait to read it again.

In all these books, and in others, healthcare personnel have been legitimately portrayed and praised as heroes and martyrs. However, last but certainly not least, I would like to bring these personal reflections to an end by remembering the crucial role played by our non-healthcare hospital staff. The nursing and medical departments certainly deserve praise, as they have endured the cruelty and harshness of COVID-19.

Nevertheless, their work and efforts would be in vain without the cleaning staff, wardens, cooks, cafeteria hospitality professionals, administrators, security forces, laboratory technicians, and many other hospital workers. They too endured this modern plague, often without protection, many times without recognition, but always with pride; they worked 24/7 and, again, always with a smile. These professionals must be lauded and recognized just the same, given that without cleaning and hospitality personnel, among other colleagues, our hospitals would instantly collapse.

As this is not the last outbreak and in all likelihood not "the Big One" either, we need to learn one more lesson from the past.¹² In the future, we must try to never take for granted the things that, during confinement, we suddenly saw as precious: a bear hug, a pat on the back, and, of course, a big smile without a mask.

I have no doubt that medical humanism and the arts are already helping us overcome COVID-19 and will help us learn to better care for our patients, our loved ones, and ourselves.

Conflicts of interest

The author declares that there are no conflicts of interest.

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