OPEN ACCESS
Freely Available Online

INTERNATIONAL JOURNAL OF GENERAL PRACTICE
ISSN NO: 2692-5257

Research

DOI: 10.14302/issn.2692-5257.ijgp-20-3299

Medical Concepts with Clinical-Epidemiological Implications that have to be Re-Assessed Since the Coronavirus Disease 2019 (Covid-19) Pandemic

Jose Luis Turabian[1,*]

[1]Specialist in Family and Community Medicine, Health Center Santa Maria de Benquerencia. Regional Health Service of Castilla la Mancha (SESCAM), Toledo, Spain

Abstract

The coronavirus disease 2019 (COVID-19) pandemic is something new that baffles us. The dominant health model and the theory that supported it until before COVID-19 are refuted or invalidated by observing the current tragically situation, which also implies lasting changes in that new medical model. Consequently, once the urgency of the epidemic is over, the conceptual and organizational building of medical care can no longer be rebuilt in the same way. Based on the COVID-19 experience, it is necessary to rethink what kind of knowledge can emerge. Some of the concepts with clinical-epidemiological implications that have to be re-evaluated since the COVID-19 pandemic are: 1. Large epidemics or changes do not arise from an event similar to the "Big Bang", but rather they develop slowly and underground, so a surveillance system must be instituted; 2. Re-evaluate what we understand by "evidence-based medicine"; 3. Patient-centered care is inadequate and must be replaced by community-centered care; 4. Telecare and changes in the organization of consultations; 5. Hospitals and health centers are "biological bombs" that act as vectors of disease and must change their architecture, organization and use; 6. The end of the nursing home model; 7. Change of habits; and 8. Social media can democratize information and help communities organize.

Corresponding author: Jose Luis Turabian, Health Center Santa Maria de Benquerencia Toledo, Spain, E-mail: jturabianf@hotmail.com

Keywords: COVID-19; General Practice; Epidemiology; Population Surveillance/methods; Public Health Practice

Received: Apr 01, 2020 **Accepted:** Apr 09, 2020 **Published:** Apr 09, 2020

Editor: Abate Yeshidinber Weldetsadik, Pediatrics, Saint Paul's Hospital Millennium Medical College, 1271 Addis Ababa, Ethiopia

Introduction

The current outbreak of coronavirus disease 2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1], continues to spread affecting many countries and territories around the world, with their figures rapidly changing. So it is a public health emergency of international concern. As of this writing, as of March 29, 2020, the pandemic has infected more than 666,000 people and killed more than 30,000 worldwide; The United States has more than 100,000 cases and passed to China in the total number of COVID-19 cases, making it the country with most known cases worldwide [2-4].

In 2015, the founder of Microsoft gave a talk where he assured that "we are not ready" for the next world crisis, and assured that it was not due to a war but to a virus [5]. Here we have it. In this present we all wonder what the future will be like after the coronavirus. It is evident that with COVID-19 a new world order begins. Major catastrophes and the most traumatic scenarios often give rise to new social, economic and geopolitical models. We are warned that the COVID-19 pandemic will perhaps bring changes in the economic model, with more intervened and controlled economies, robotization and digitization will accelerate, there will be more telework and electronic commerce, political decisions will tend to be made by technocrats, multilateralism with stronger international organizations will increase, the ecological trend of life will increase, and possibly plane travel will be reduced and more controlled [6].

A theory is a good theory as long as it satisfies two requirements: it must accurately describe a large set of observations based on a model that contains only a few arbitrary parameters, and it must be able to positively predict the results of future observations. Any theory is always provisional, in the sense that it is only a hypothesis: it can never be proved. Although the results of the experiments often agree with the theory, we can never be sure that the next time the result will not contradict it. However, a theory can be rejected as soon as a single observation is found that contradicts its predictions. As the philosopher of science Karl Popper has emphasized, a good theory is characterized by the fact of predicting a large number of results that in principle can be refuted or invalidated by observation. Every time a new experiment is found to be in accordance with the predictions, the theory survives and our confidence in it increases. But if, on the contrary, a new observation is ever made that contradicts the theory, we will have to abandon it or modify it. In practice, what happens is that a new theory is constructed that is actually an extension of the original theory [7]. The theory behind our healthcare model has been refuted with the COVID-19 pandemic. The coronavirus crisis means a tragic observation that contradicts the theory valid until now, and offers the vision of a radically different future, where many clinical, epidemiological, organizational and educational concepts will change.

In the field of health, and from a primary care perspective, the COVID pandemic raises many questions related to the urgency of dealing with the disease. Some of them may be: Would a practical information bank be useful beyond the plethora of protocols? Is it possible to carry out any diagnostic activity in general medicine when suspected COVID-19? When is the best time to refer to the hospital from the level of primary care mild cases with risk factors? How to manage mild cases at home? When to do home hospitalization? How to organize work in general medicine and in the hospital? How to improve telecare? How to detect situations of clinical or social vulnerability in patients? How to improve community activities and coordination with municipalities, with social services, organizations, collectives? How to act in Nursing homes? What are implications on psychosocial determinants in my area of work? What implications will it have inmy community? What effects will quarantine have on my patients? How many patients will I have? Who will be the most vulnerable patients? What implications will it have on primary care health personnel? What implications will it have on the organization of primary care? What implications regarding home treatment of patients and contacts? What implications in my patients' treatments? What implications will it produce in teaching at my health center? What implications for my health and that of my family? [8].

The answers to these questions are urgent, but

it will probably be more important, in the short and medium term, to understand how the current healthcare model will change and what its implications are. Furthermore, the answers to the previous questions will depend on the new model of medical care that will emerge after COVID-19. In this tragic scenario, this article, which is a personal view, aims to conceptualize and summarize the medical concepts with clinical-epidemiological implications that have to be re-evaluated since the COVID-19 pandemic, based on a reflection mainly from primary care, and based on an unsystematic or opportunistic search for information and the author's experience.

Methods

The comments in this article should be considered as a personal point of view, based on the author's experience during 30 years of work in general medicine, plus an unsystematic or opportunistic search for information. The search for information was based on a non-systematic review considering the bibliographic references of selected articles, reviews of books related to the topic and opportunistic searches on the Internet. This non-systematic review was carried out, which aimed to explore, describe and discuss, in a broad way, the topic of clinical-epidemiological implications that have to be re-evaluated since the COVID-19 pandemic.

Discussion

It is clear that everything in life is provisional and always has a high degree of uncertainty. The COVID-19 pandemic strikes the role of health care, from its organization, to the role of primary care, the doctor-patient relationship, the role of the hospital and the community. So, entities and concepts that seemed solid and immovable to us, in which medical interventions were supported, and of which we used to be proud, have broken into pieces, forcing us to abandon these models or modify them. Thus, experts have been advancing for days that many things must change after the epidemic.

One of the crucial elements of medicine, mainly general medicine, is the combination of patient-centered care (PCC) with the effectiveness of medical intervention in the context of evidence-based medicine (EBM) [9, 10]. However, in just a few weeks all this conceptual and organizational building has collapsed; The COVID-19 pandemic has brought them down abruptly and painfully. And it seems that once the urgency of the epidemic is over, this conceptual and organizational building of medical care can no longer be rebuilt in the same way. Table 1 presents some of the medical concepts with clinical-epidemiological implications that have to be re-evaluated since the COVID-19 pandemic, which will be discussed below.

Great Epidemics or Great Changes do not Arise from an Event Similar to the "Big Bang"

Great epidemics or the great changes do not

Table 1. Some Medical Concepts with Clinical-Epidemiological Implications that have to be Re-Assessed Since the Covid-19 Pandemic

1	Large epidemics or changes do not arise from an event similar to the "Big Bang", but they develop slowly and underground long before their explosion, so a surveillance system must be instituted
2	Re-evaluate what we understand by "evidence-based medicine"
3	Patient-centered care must be replaced by community-centered care
4	Telecare and changes in the organization of consultations (triage, telephone consultations, etc.)
5	Hospitals and health centers are "biological bombs" that act as vectors of disease and must change their architecture, organization and use
6	The end of the nursing home model
7	Change of habits
8	Social media can democratize information and help communities organize

arise from an event similar to the "Big Bang" (the joint creation of matter, space and time, from what is known as a singularity), but they are slowly brewing underground and apparently, they are not visible long enough before its explosion. Consequently it is essential that an adequate permanent surveillance system be instituted.

Thus, the Covid-19 outbreak did not stem from an explosive event that appeared out of nowhere, at the Huanan seafood wholesale market in Wuhan, China, but could have originated elsewhere and probably involved more than one zoonotic spillover [11]. In the same way as it happens in astronomy (where it is not known what is happening far from us in the universe, at this moment, because the light we see from distant galaxies left them millions of years ago, and consequently, when we look at the universe, we see it as it was in the past), it also happens in the field of health / disease: we do not really see what is happening in the present moment but we have a delayed image of something that has already changed, modified or disappeared, but still cannot be objectified.

The journal Science published an article [12] that made it quite clear: almost 80% of the cases diagnosed (documented) in China before the confinement by COVID-19 started on January 23 would have been infected by undocumented cases (not known), for having little or no symptoms. The authors estimate that undocumented cases were less contagious than documented (diagnosed) cases, but since they were many more, they were the source of contagion for the vast majority of documented cases. Previously, various articles in notable magazines pointed in that direction [13-16].

In Italy, a research-intervention carried out in the small town of Vo'Euganeo of just over 3,000 inhabitants found in mid-February 2020 that only 10% of patients infected with the virus had symptoms and that the asymptomatic were the responsible for most of the broadcast. It could be shown that isolating positives (symptomatic or not) made it possible to reduce the frequency of infection. For this purpose, the COVID-19 polymerase chain reaction was carried out, in stages, for practically the entire town [17].

Also in Italy, the first phase of the epidemic of COVID-19 in Lombardy that started on February 20, 2020 was studied. The authors studied the cases and their contacts when the first 5,830 laboratory confirmed cases were reached. They concluded that at the time of detection of the first case, the epidemic had already spread in most municipalities in southern Lombardy and they did not observe significantly different viral loads on nasal swabs between symptomatic and asymptomatic [18, 19].

Therefore, one of the lessons that this crisis will leave is the need for better information management systems. Health authorities must multiply their capacity to collecting, process and disseminate statistical information. Data is not a luxury, but a tool against an epidemic: it is the basis for detecting outbreaks, measuring their depth, keeping up with them and acting quickly. Those systems will be useful in the next crisis, but they could be useful much sooner. When containment measures are relaxed, having the ability to act accurately and quickly will be essential to prevent a new virus outbreak.

Re-evaluate what is meant by "Evidence-Based Medicine"

The COVID-19 pandemic is making us re-evaluate what we mean by EBM. In the days leading up to the pandemic, many of us had the "randomized trial" mindset. We often rule out good observational studies without rigorous review, and we likewise accept even suspicious studies just because they are randomized. We do not need to leave EBM in the aftermath of the COVID-19 pandemic. We need to accept it more than ever. But we must realize what we have known all along: EBM is not just about randomized trials; it's about appreciating the strengths and weaknesses of all the data, and allowing the data to bring us closer to the truth [20].

But with COVID-19, we can't afford to wait for those big, definitive randomized trials. EBM is not just about randomized trials; it is about integrating each study into the existing body of data, combining the best available science, reaching defensible conclusions. When we need to make decisions quickly, the "perfect" can be the enemy of "good." There may be studies with "statistically insignificant" results and not necessarily thrown away. COVID-19 has made us think about

research in an unusual way. Thus, a new study can be assessed in the context of what would be called "the probability of success prior to the study"; that is, with a Bayesian approach. It is the same method that the general practitioner (GP) usually uses for decision making. From an epidemiological point of view, the continuity of general medicine implies significant efficiency gains, since a substantial part of the medical time is dedicated to the diagnostic process. This diagnostic process can be conceptualized as a way to reduce initial suspicions sequentially through a hypothetical-deductive method, as Bayes' Theorem expresses. The doctor collects information (medical history, examination or several diagnostic tests) to review the initial suspicions and the probability assigned to them. New diagnostic information serves to review probabilities until it is more advantageous to stop the diagnostic process and proceed to treat / not to treat ("wait and see" included) [21].

An example is study on drugs, such as hydroxychloroquine or lopinavir to assessing whether they could be useful for COVID-19. The way to look at those studies could be: what is the pre-study probability that the drug is effective for COVID-19? Does the new study increase the prediction that the drug might help? Yes, the answer is that we are where we started (for example due to problems with study design, not only because of its observational nature, but also because of differential loss to follow-up, etc.), the new study does not support effectiveness. However, if we have data that a drug is effective, and after a new study this trend continues, we can probably be reasonably sure that the drug works. And maybe that's enough to start trying treatments. Additionally, we can increase the probability curve with successive trials showing similar signals, even if none of them is statistically significant from the classical point of view. As more data is entered, the efficiency estimate can be revised iteratively and transparently [20].

Patient-Centered Care can be Inadequate and must be replaced by Community-Centered care

People are subjects of experiences, values, beliefs, emotions and feelings. If the doctor becomes interested only in diagnosis and biomedical treatment, he will miss the meaning of the patient as a person. The main role of the GPs not so much cares for entire families or communities, as perform clinical care to individuals 'on' their families and communities, in their contexts. Once this is understood, the concepts of diagnosis, treatment, cure and resolution are changed. A truly personal approach is then a contextual approach [22]. Relationship of mutual participation has also been called PCC, and is characterized by trying to provide ways to understand "the sick experience", considering it a fundamental part in order to reach a diagnosis and adequate treatment. It is admitted that PCC improves outcomes and costs [23-26].

Western health care systems have been built around the concept of PCC. However, in a pandemic PCC is inadequate and must be replaced by community-centered care (CCC). Solutions for COVID-19 are required for the entire population, not only for a certain individual or for a certain hospital. In these cases, what is needed are decisions focused on the community, at the local, regional and national levels, which give guidelines to be able to adopt special measures to reduce epidemiologically negative behaviors, and not shared decision-making between patient-doctor at individual level. But, in addition, it must be understood that the true meaning of the PCC is the attention of the "person in its context"; that is, "the true meaning of the PCC is the CCC" [27].

For the GP, CCC means giving importance and taking into account contexts, relationships, actors and resources. Rather than "individual" focus, "individual in context" focus. Individual disease depends on contexts and in turn produces consequences in the contexts: social, cultural, economic, environmental and political where it takes place. Therefore, clinical and educational activity can always (should) have a community dimension even when working with individuals or patients. Patients are in contexts (families, social groups, neighborhoods) and immersed in social networks that involve: resources, influences, connections [28].

Telecare and Changes in the Organization of Consultations

The characteristics of consultations in the health center are already changing and will do so even more: the majority are patients with respiratory problems; the

others not showing up for appointments or are very fast queries; scheduled patient visits are cancelled, and more and more consultations are and will be by phone, without the physical presence of the patient. This logical trend towards telehealth services is also occurring elsewhere [29, 30].

The demand that seemed impossible to contain [31] at once has disappeared. The waiting rooms are almost empty. All non-urgent activity is suspended. But, this does not mean that all human and material resources are now destined to treat the pandemic: the world cannot be stopped. Other critical healthcare programs must be maintained during this crisis. People with chronic conditions depend on continuity of care to maintain their health [32]. Although screenings have been suspended in healthy people (who may have a home monitor to control blood pressure, etc., and can transmit their readings to the doctor), the criteria for control of chronic patients have been modified, and if there is no a compelling reason to order laboratory tests, they are postponed.

In the COVID-19 crisis, the first step in the general medicine consultation is a careful telephone triage. But surely after COVID-19 many GPs will use the phone much more. In the current situation, GPs are treating strep throat over the phone; they may not be able to feel the lymph nodes and look at the throat, but they will have to be more liberal about decision making. Furthermore, prescribing strategies are being changed, which can help minimize face-to-face visits to the office. GPs begin to prescribe treatments for chronic patients (hypertension, diabetes, asthma, COPD, osteoarthritis, depression, etc.), for longer periods than they were previously doing; possibly GPs would like to see these patients every month, or every few months, but they also do not want them to have a face-to-face visit in the consulting room [33].

The world has changed towards telemedicine. That will allow for more routine care. A couple of months ago, only a very small percentage of GPs used video visits. But the COVID-19 crisis has changed everything. GPs who don't want to deal with complicated technology have little to fear about telemedicine. This is not like implementing a new Electronic Health Record (EHR) system, which has left many doctors reluctant to the technology due to the complicated integration into daily practice [34, 35]. To participate in telemedicine at the most basic level, GPs only need a computer, a camera, a headset with a microphone, and a secure platform that can manage telemedicine information. In fact, GPs can now do telemedicine simply using a Smartphone and an app like FaceTime or Skype. The GPs can manage the end of the transmission by configuring two screens for the telemedicine visit: one screen for the telemedicine connection and the other to enter the documentation in your EHR. It is kept in mind that probably after the COVID-19 crisis, the doctor will want to continue doing telemedicine. Furthermore, data from pulmonary, cardiac, diabetes and other measurement devices in the patient's home can be synchronized with software platforms with algorithms that alert practice to certain events or findings [33].

However, not all patients will be able to use telecare services. Seniors, for example, may be less likely to have smartphones and less likely to quickly switch to telehealth options during and after a pandemic. Guidelines will be needed to determine which patients can be treated by phone or video, what care should continue and which can be delayed, rescheduled, cancelled or performed remotely to protect GPs and patients and lead to an expected increase in patients with COVID-19, as well as the foreseeable avalanche of patients with non-COVID-19 health problems that have now been postponed [36]. In this way, these guidelines can set further proposals for the organization of medical services after COVID-19.

Hospitals and Health Centers (to a lesser extent) are "Biological Bombs" that act as Vectors of Disease and must Change their Architecture, Organization and Use

It was already known that above a certain threshold, or in certain circumstances, health care can be iatrogenic [37-39]. The COVID-19 pandemic tragically reminds us of this. For example, we are learning that hospitals might be the main COVID-19 carriers, as they are rapidly populated by infected patients, facilitating transmission to uninfected patients. Patients are transported by our regional system, which also contributes to spreading the disease as its ambulances and personnel rapidly become vectors. Health workers are asymptomatic carriers or sick without

surveillance [27]. Thus, it is recommended that a practice area (a connected building or temporary structure) be designated as a "respiratory virus assessment center" during the COVID-19 epidemic. And probably similar architectural and organizational recommendations, such as separating healthy from sick, or possible infectious patients, etc, will also be useful for the future both in hospitals and in community health centers [33].

End of the Long-term Care Facilities / Nursing Homes Model

Long-term care facilities and Nursing homes are high-risk settings for severe outcomes from outbreaks of COVID-19, owing to both the advanced age and frequent chronic underlying health conditions of the residents and the movement of health care personnel among facilities in a region. In the context of rapidly escalating COVID-19 outbreaks, proactive steps by long-term care facilities to identify and exclude potentially infected staff and visitors, actively monitor for potentially infected patients, and implement appropriate infection prevention and control measures are needed to prevent the introduction of COVID-19 [40].

In this sense, the model of Nursing homes, and also for people with disabilities (that has been converted during the COVID-19 pandemic into real death traps), must change radically. A model based on the concentration of risk groups in small spaces, with low quality standards and insufficiently prepared, that cannot cope with an epidemic like the one we are experiencing, must be completely reformulated. In this way, the cost in lives that the current model of nursing homes in Europe and America, at least, will suppose will be very important and hardly affordable. The community cannot allow it again [41].

Change of Habits

During COVID-19 and thereafter, our habits will change. People are forced to stay home in hopes of stopping the spread of the contagion. "Normality", as we know it, has exploded. People's self-monitoring of health could include taking their temperature regularly and watching for signs of an illness such as fever, cough, etc. It will also involve limiting interaction with others and paying more attention to contact with other people. The fear of physical contact with strangers is going to become more deeply rooted and will probably change to some degree the very close forms of physical interaction typical of Mediterranean societies. One of the most visible changes to societal norms since the COVID-19 has hit has been avoiding handshakes. In this new era of the coronavirus and the practice of social distancing, there will undoubtedly be a cultural shift in the way we all greet one another. Shaking hands, high fives, hugs, and kisses are modes of greeting to be abandoned at this point. Social greetings may now entail a hand on the heart, a head nod, or pretty much any action that enables one to avoid direct touch.

People might start pushing elevator buttons with their elbow or even an object like a pen instead of their fingers. The same is goes for pushing pin number at the ATM or making a purchase at a store. Directly touching the keypads with your fingers will be an action of the past. In society, relationships are increasingly mediated by new technologies that will involve new models of teleworking, digitalization of processes and online shopping. Personal habits such as covering your nose and mouth with a disposable tissue when coughing or sneezing, daily cleaning of surfaces and frequently touched objects (e.g., tables, light switches, etc.) may be routine, as well as, washing hands frequently with soap and water. Dietary habits will be modified; there will be a greater focus on purchasing ingredients to prepare your own meals as hygienically as possible at home, more people will rethink eating out of communal food containers. They will avoid fast food restaurants, buffets and salad bars to avoid picking up germs from spoons, and outdoor life will be re-valued. Masks, disposable gloves and hydro alcoholic gels would be usual clothing and will be common in public spaces, even when the emergency is over. There is a real possibility that cinemas have fewer seats, masks are required to attend concerts or football games, or collective prayers are limited. People will not go to work with a fever, and perhaps a scanner will take their temperature before allowing access to work.

In the future there will be a renewed focus on finding design solutions for individual buildings and wider neighbourhoods that enable people to socialise without being packed "sardine-like" into compressed restaurants, bars and clubs. In recent years, although cities in the global south are continuing to grow as a

result of inward rural migration, northern cities are trending in the opposite direction, with more affluent residents taking advantage of remote working capabilities and moving to smaller towns and countryside settlements [42-44].

Social Media can Democratize Information and help Communities Organize

In a crisis, social media can democratize information and help communities organize. Public conversation on social media can help the world learn faster, solve problems better, and realize that we are all in this together. But there is a lot of wrong and dangerous information and opinions. It be keep in mind that social networks have always been designed to give us what we want, not what we need. Most people who spread misinformation are because they are misinformed. The COVID-19 crisis can teach us to pay less attention to this incorrect and dangerous information [45].

It's key to cultivate critical intelligence, and a situation like this reveals it. Amid so much excess information, repeated words, and worse, amid so much misinformation, citizens must be able to ask themselves the questions of a free mind: who tells us the truth, which deceives us, who wants to manipulate us [46].

Conclusions

Experience is the essence of knowledge and the COVID-19 pandemic is something new, it is something unheard of that baffles us. We had never been through something like this; we have never experienced this that we see right now. The COVID-19 pandemic causes us great surprise. But since knowledge is brought by experience, what needs to be done is to think or re-think what kind of knowledge can spring from this experience. The dominant health care model and the theory that supported it until before COVID-19 are refuted or invalidated by the observation of the current situation, which also implies lasting changes in this model of cynical, epidemiological and organizational practices in both primary care and hospital care. Albert Camus wrote that "the plague is not tailored to man; therefore man thinks that the plague is unreal, it is a bad dream that will go away". But it does not always happen, and from a bad dream to a bad dream it is men who go away. There they are some challenges whose attention should not be deferred, at risk that this pandemic becomes a lesson to be learned anew when the future reaches us again.

Note: "The plague is not tailored to man, therefore man thinks that the plague is unreal, it is a bad dream that will go away."

Albert Camus. The plague (1948)

References

1. Wei X, Li X, Cui J (2020) Evolutionary Perspectives on Novel Coronaviruses Identified in Pneumonia Cases in China. National Science Review; nwaa009. https://doi.org/10.1093/nsr/nwaa009
2. Editorial (2020) COVID-19, a pandemic or not? Lancet Infect Dis. https://doi.org/10.1016/S1473-3099(20)30180-8
3. COVID-19 CORONAVIRUS OUTBREAK. https://www.worldometers.info/coronavirus/
4. Coronavirus COVID-19 Global Cases by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins. The Center for Systems Science and Engineering (CSSE) at JHU. https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6
5. Sault S (2020) This is what Bill Gates had to say about epidemics, back in 2015. World Economic Forum; 19 Mar. https://www.weforum.org/agenda/2020/03/bill-gates-epidemic-pandemic-preparedness-ebola-covid-19/
6. Temiño N (2020) [Ten keys to the world that awaits us after the coronavirus]. eldiario.es; 21/03. https://www.eldiario.es/murcia/murcia_y_aparte/claves-mundo-espera-despues-coronavirus_6_1007959214.html
7. Hawking SW (1988) A brief history of time. From the big ban to black holes. New York: Bantam Books.
8. Turabian JL (2020) Micro-impact of the pandemic by COVID-19 in the general medicine. Clinical and epidemiological reflections from the situation in Spain march 2020. Epidemol Int J. In Press.
9. Turabian JL (2018) Patient-centered care and biopsychosocial model. Trends Gen Pract; 1: https://

www.oatext.com/patient-centered-care-and-biopsychosocial-model.php#Article

10. Brickley B, Sladdin I, Williams LT, et al. (2020) A new model of patient-centred care for general practitioners: results of an integrative review. Fam Pract; 37(2): 154-72. https://doi.org/10.1093/fampra/cmz063
11. Zhang X (2020) Epidemiology of Covid-19. N Engl J Med. https://www.nejm.org/doi/full/10.1056/NEJMc2005157?query=RP
12. Li R, Pei S, Chen B, et al. (2020) Substantial undocumented infection facilitates the rapid dissemination of novel coronavirus (SARS-CoV2). Science; eabb3221. https://science.sciencemag.org/content/early/2020/03/24/science.abb3221
13. Bai Y, Yao L, Wei T, et al. (2020) Presumed Asymptomatic Carrier Transmission of COVID-19. JAMA. https://jamanetwork.com/journals/jama/fullarticle/2762028
14. Rothe C, Schunk M, Sothmann P, et al. (2020) Transmission of 2019-nCoV Infection from an Asymptomatic Contact in Germany. N Engl J Med; 382:970-1. https://www.nejm.org/doi/full/10.1056/NEJMc2001468
15. Hu Z, Song C, Xu C, et al. (2020) Clinical characteristics of 24 asymptomatic infections with COVID-19 screened among close contacts in Nanjing, China. Sci China Life Sci. https://www.ncbi.nlm.nih.gov/pubmed/32146694
16. Han Y, Yang H (2020) The transmission and diagnosis of 2019 novel coronavirus infection disease (COVID-19): A Chinese perspective. J Med Virol; 1–6. https://doi.org/10.1002/jmv.25749
17. Fais E (2020) Coronavirus. Asintomatici, il virologo: «Se continuiamo a mandarli in giro l'epidemia non la elimineremo mai». El Gazzettino.it. Venerdì 13 Marzo. https://www.ilgazzettino.it/nordest/primopiano/coronavirus_italia_news_virologo_asintomatici_problema_vero_epidemia-5108698.html
18. Cereda D, Tirani M, Rovida F, et al. (2020) The early phase of the COVID-19 outbreak in Lombardy, Italy. ArXiv:2003.09320 [q-bio.PE]. https://arxiv.org/abs/2003.09320
19. Simó J (2020) [The first not true of the coronavirus pandemic]. Salud, dinero y atención primaria. https://saludineroap.blogspot.com/2020/03/la-primera-no-verdad-de-la-pandemia-del.html
20. Wilson FP (2020) Hydroxychloroquine for COVID-19: What's the Evidence? Medscape; March 25. https://www.medscape.com/viewarticle/927342?nlid=134696_4663&src=WNL_mdplsnews_200327_mscpedit_fmed&uac=327178AR&spon=34&impID=2326422&faf=1#vp_1
21. Turabian JL (2020) Epidemiological Value of Continuity of Care in General Medicine (Part one of Two). Epidemol Int J;, 4(1): 000135. https://medwinpublishers.com/EIJ/EIJ16000135.pdf
22. Turabian JL (2018) Some Basic Concepts of Family Medicine Explained by Means of Fables (Part 2 of 2): Patient-Centered Interview, Biopsicosocial Model, Actors and Resources/Strengths of the Patients, and Concept of Health and Disease. Archives of Community and Family Medicine; 1(1): 10-8. http://www.sryahwapublications.com/archives-of-community-and-family-medicine/pdf/v1-i1/3.pdf
23. Cuba-Fuentes M, Contreras Samamé JA, Ravello Ríos PS, Castillo Narro MA, Coayla Flores SA (2016) [Patient-centered medicine as a clinical method]. [Article in Spanish]. Rev Med Hered; 27:50-9. http://www.scielo.org.pe/pdf/rmh/v27n1/a09v27n1.pdf
24. Navathe As, Clancy C, Glied S (2011) Advancing Research Data Infrastructure for Patient-Centered Outcomes Research. JAMA; 306: 1254-5. http://jama.ama-assn.org/cgi/content/full/306/11/1254?etoc
25. Editorial (2018) A simple communication technique to increase patient satisfaction and empowerment. In Practice. A Blog From FPM Journal. https://www.aafp.org/journals/fpm/blogs/inpractice/entry/bathe_technique.html?cmpid=em_FPM_20181024
26. Kuehn BM (2012) Patient-Centered Care Model Demands Better Physician-Patient Communication. JAMA; 307 (5): 441-2. http://jama.ama-assn.org/cgi/content/full/307/5/441?etoc

27. Nacoti M, Ciocca A, Giupponi A, et al. (2020) At the Epicenter of the Covid-19 Pandemic and Humanitarian Crises in Italy: Changing Perspectives on Preparation and Mitigation. N Engl J Med. https://catalyst.nejm.org/doi/full/10.1056/CAT.20.0080?cid=DM89089_NEJM_COVID-19_Newsletter&bid=173814256

28. Turabian JL, Perez Franco B (2008) [Individual health care with community orientation-Contextualized attention: the figure is the background]. [Article in Spanish]. Revista Clínica Electrónica en Atención Primaria. https://ddd.uab.cat/pub/rceap/rceap_a2008m9n16/rceap_a2008m9n16a8.pdf

29. Greenhalgh T, Wherton J, Shaw S, Morrison C (2020) Video consultations for covid-19. BMJ; 368:m998. https://www.bmj.com/content/368/bmj.m998?utm_source=etoc&utm_medium=email&utm_campaign=tbmj&utm_content=weekly&utm_term=20200320

30. Getting Paid. A blog from JFP Journal (2020) Coronavirus (COVID-19): new telehealth rules and procedure codes for testing. https://www.aafp.org/journals/fpm/blogs/gettingpaid/entry/coronavirus_testing_telehealth.html?cmpid=em_FPM_20200318

31. Turabian JL (2019) Suggestions to Address the Increase in Demand and Costs in General Medicine: Escaping From a "Black Hole" and from Boomerang Effect. J Qual Healthcare Eco; 2(3): 000119. https://medwinpublishers.com/JQHE/JQHE16000120.pdf

32. Achieving a fair and effective Covid-19 response: an open letter to Vice-President Mike Pence, and other federal, state and local leaders from public health and legal experts in the United States (2020). https://law.yale.edu/sites/default/files/area/center/ghjp/documents/final_covid-19_letter_from_public_health_and_legal_experts.pdf

33. Sikka N (2020) How to Start Doing Telemedicine Now (In the COVID-19 Crisis). Perspective. Medscape Business of Medicine; March 25. https://www.medscape.com/viewarticle/927323_1

34. Turabian JL (2018) General Medicine-Based Quality Electronic Clinical Record. J Qual Healthcare Eco; 1 (1): 000106. https://medwinpublishers.com/JQHE/JQHE16000106.pdf

35. Turabian JL, Perez Franco B (2004) [The electronic medical record: eating soup with a fork?]. [Article in Spanish]. Cuadernos de Gestión; 10(4):175-88. http://es.scribd.com/doc/34257833/hacp-electronica-sopa-con-tenedor-cuad-gestion-2004#scribd

36. Frellick M (2020) Should Docs Stop Providing Routine Care in the Era of COVID-19? Medscape; March 20. https://www.medscape.com/viewarticle/927265?nlid=134638_430&src=WNL_mdplsfeat_200324_mscpedit_fmed&uac=327178AR&spon=34&impID=2323147&faf=1#vp_3

37. Illich I (2003) Medical nemesis. J Epidemiol Community Health; 57:919-22. https://jech.bmj.com/content/57/12/919

38. Turabian JL (2019) Polypharmacy is an Indicator of Bad Practice and Low Quality in General Medicine. J Qual Healthcare Eco; 2(4): 000130. https://medwinpublishers.com/JQHE/JQHE16000130.pdf

39. Turabian JL (2020) Theory of the Evolution of Multimorbidity: It is Created, In A Small Part but Significant, by the Medical Intervention Itself. COJ Rev & Res; 2(3): COJRR.000540. https://crimsonpublishers.com/cojrr/pdf/COJRR.000540.pdf

40. Temet M. McMichael, Dustin W. Currie, Shauna Clark, et al. (2020) Epidemiology of Covid-19 in a Long-Term Care Facility in King County, Washington. N Engl J Med. https://www.nejm.org/doi/full/10.1056/NEJMoa2005412?query=RP

41. Roldán D (2020) ["The control of nursing homes is vital so as not to saturate the system."]. Sábado, 21 marzo. https://www.leonoticias.com/sociedad/salud/pere-godoy-control-residencias-vital-20200321204015-ntrc.html?ref=https%3A%2F%2Fwww.google.com%2F

42. Shenker J (2020) Cities after coronavirus: how Covid-19 could radically alter urban life. The Guardian; Thu 26 Mar. https://www.theguardian.com/world/2020/mar/26/life-after-coronavirus-pandemic-change-world

43. Yuko E (2020) 13 Everyday Habits That Could (and Should) Change Forever After Coronavirus. Reader's Digest. https://www.rd.com/culture/everyday-habits-that-could-change-forever-after-coronavirus/

44. Coppola D (2020) Fast food habits during COVID-19 in Italy 2020. Statista. Health & Pharmaceuticals; Mar 19. https://www.statista.com/statistics/1103159/fast-food-habits-during-covid-19-in-italy/

45. Marantz A (2020) What the Coronavirus Crisis Has Changed About Social Media, and What It Hasn't Changed. The New Yorker; March 26. https://www.newyorker.com/news/daily-comment/what-the-coronavirus-crisis-has-changed-about-social-media-and-what-it-hasnt-changed?
our-ce=EDT_NYR_EDIT_NEWSLETTER_0_imagenewsletter_Daily_ZZ&utm_campaign=aud-dev&utm_source=nl&utm_brand=tny&utm_mailing=TNY_Daily_032720&utm_medium=email&bxid=5bd674a024c17c104800ee41&cndid=36284699&esrc=&mbid=&utm_term=TNY_Daily

46. de Llano P (2020) [Emilio Lledó: "Hopefully the virus will make us leave the cavern, the darkness and the shadows."]. El País; Madrid. 29 MAR. https://elpais.com/cultura/2020-03-28/emilio-lledo-ojala-el-virus-nos-haga-salir-la-caverna-la-oscuridad-y-las-sombras.html