



The COVID-19 pandemic as an opportunity to move healthcare system from hospital-centered care to patient-centered care: do black swans really exist?

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Since it has been firstly identified in December 2019, the Coronavirus disease 2019 (COVID-19) has noticeably spread worldwide causing a major threat to the global public health and economy and making it one of -and most likely not the last- most extensive pandemics in history. The unpredictable characteristics of this infection rapidly forced the national governments throughout the world to take actions, striving to limit the impact of the pandemic on the population. The healthcare workers and health care systems (HCS) faced a new dramatic, unprecedented challenge that tested them to a dramatic and urgently needed reconfiguration. Special hospitals rooted on care of COVID-19 patients, the so called “Nightingale hospitals”, have been issued in strategic areas [1, 2]. In the report of Fluck et al. published on the current issue of Internal and Emergency Medicine, the authors examined the association of hospital length of stay (LOS) with healthcare quality indicators, such as primary admissions, in-hospital mortality, post-discharge readmission and mortality, in patients admitted with general medical conditions (non-COVID-19). The aim of this retrospective monocentric study was to investigate whether the abrupt transformation in healthcare due to the coronavirus disease pandemic had an adverse impact on hospital care

quality for non-COVID-19 admissions. A total of 21,192 non-COVID-19 patients admitted in a single NHS hospital in Surrey County was retrospectively enrolled, comprising a reference group of 10,173 patients admitted during the pre-pandemic period, and 11,019 patients admitted during the pandemic period; furthermore, patients were divided into categories according to their LOS, a measure of time to discharge. The research by Fluck et. al. focused on comparing healthcare quality indicators, such as primary admissions, in-hospital mortality, post-discharge readmission and mortality, between the pre-pandemic and the pandemic group, according to prespecified LOS categories. In terms of admissions, while there were no significant differences regarding sex distribution and underlying health status of admitted patients between the two timeframes, the authors pointed out a higher admission rate for serious conditions, such as myocardial infarction, pulmonary embolism and cerebrovascular accidents, compared to those for respiratory diseases and common age-related infections; however, in-hospital mortality rate during the pandemic was significantly lower for each category of LOS, when compared to the pre-pandemic data, (1434 in-hospital deaths, and 19,721 patients who survived to discharge, 9401 from pre-pandemic and 10,320 from COVID-19 pandemic period; in-hospital mortality rate during the pandemic was 6.0%, compared to the pandemic period in hospital mortality rate, which was 7.6%), thus suggesting that the quality and standards of care were not significantly affected by the coronavirus outbreak. One of the main focuses of the authors’ analysis concerned care-quality outcomes, such as post-discharge readmissions and mortality rate: first, there was no significant difference between the pre-pandemic and pandemic, both considering patients with short (< 7 days) or medium (7–14) hospital LOS, therefore there was no evidence for a risk of early readmission or short-term mortality in patients with a shorter hospitalization. Furthermore, the authors were able to highlight how among patients belonging to the pandemic group

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who stayed in hospital for longer (LOS > 14 days), there was even a lower readmission rate, comparing to the pre-pandemic reference group, thus indicating an even improved discharge planning efficiency. There were no significant differences in the rates of mortality within 30 days of hospital discharge between pre-pandemic and pandemic groups who stayed in hospital < 7 days, 7–14 days or > 14 days. The large number of data collected and evaluated by the current work, covering a wide range of age and health status, is one of the strengths of the present research, as well as the choice to consider objective indicators to assess the level of care provided to non-COVID patients; on that basis, the authors demonstrated how, in their experience, a high standard of care has been maintained during the pandemic [3]. The study that Fluck and colleagues rigorously conducted at a NHS hospital in Surrey has the potential to become a prototype for other institutions, suggesting the importance of retrospectively analyzing the impact of the pandemic on non-COVID patients, to reassess the quality of healthcare delivery process during the pandemic. The same intent was pursued in a recently published study by Di Bidino and Cicchetti, in which the authors collected data only relative to the Italian healthcare system revealing how, in the Italian experience and despite the system's efforts, the COVID-19 outbreak negatively impacted the accessibility of patients with other issues to healthcare services, likely resulting in worst clinical outcomes for such patients [4]. The unprecedented stress test experienced by healthcare system worldwide during the COVID-19 pandemic has been an epochal push to re-engineer the healthcare delivery process and reallocate resources. The consequent rethinking of hospitals and healthcare structures leads to inevitable implications on the management of non-COVID patients. HCS in different countries have taken a variety of different approaches to managing the pandemic such as expanding capacity and postponing routine care [5]. The large number of data collected and evaluated, covering a wide range of age and health status, is one of the strengths of the present research, as well as the choice to consider objective indicators to assess the level of care provided to non-COVID patients; on that basis, the authors demonstrated how, in their experience, a high standard of care was maintained during the pandemic. However, it is worth to mention that all the elements that could have made such virtuous results possible: as it is already stated in the work itself, many changes were made regarding the structure and logistics of hospitals; moreover, the English community care system saw the implementation of a new way of working to provide accurate remote management of patients, playing a critical role in reducing hospital readmissions. We strongly feel as the present study's results need to be interpreted considering said circumstances, being aware of the peculiarities of the British NHS experience that may be considered unique. However, these data once again draw

attention to how COVID-19 may be a unique opportunity to improve the world's healthcare models by shifting the focus from acute care in hospitals to acute prevention through community medicine.

To lend some context to that claim the article by Farsalinos et al. revealed that many countries in Europe and elsewhere implemented strategies mainly based in social distancing measures and healthcare system reinforcement. Hospital preparedness has been the main strategy used by governments without considering that primary community and home care are the only viable strategies that could achieve the goal of pandemic mitigation. That is the case example of Greece, a country that was largely unprepared during the first wave of the pandemic, which implemented a second strict horizontal lockdown without a proper reinforce to the primary and community care. The consequences were, not only the adverse health effects resulting from the economic devastation, but also the highest COVID-19 death rates in Europe during the second wave [6].

In parallel with the black swan theory [7] postulated by Lebanese mathematician *Nassim Nicholas Taleb*, according to which previously considered unpredictable events (black swans), whose magnitude is at the beginning undertook by the common sense, are finally able to catalyze momentous advances in human history, one might optimistically hope that the COVID-19 pandemic will be the driver for finally implementing a patient-centered healthcare system.

Declarations

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed consent For this type of study formal consent is not required.

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