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## Letter to the Editor

## Gathering evidence on the decreased emergency room visits during the coronavirus disease 19 pandemic

During the ongoing coronavirus disease 2019 (COVID-19) pandemic, primary and secondary prevention, as well as treatment has experienced major disruptions, as elective medical consultations and procedures have been temporarily suspended in most of the affected countries in the effort to suppress active transmission in healthcare settings and to reallocate resources to fight the pandemic. Yet, there is emerging evidence of decreased emergency room (ER) visits in several European countries.<sup>1–3</sup> This phenomenon is quite puzzling, as in addition to the disrupted provision of elective health services, COVID-19 is associated with multiple acute clinical presentations requiring emergency care. Furthermore, one would expect numerous ER visits to involve diagnostic work-up of COVID-19 suspected cases.

Two diametrically opposed hypotheses can be made to explain this phenomenon: (a) there is a true fall in acute pathologies unrelated to COVID-19 leading to lesser demand for emergency care services and thus lesser ER visits, (b) there is underusage of emergency services by COVID-19 affected and/or COVID-19 unaffected patients

suffering from acute pathologies translating into fewer ER visits.<sup>4</sup>

Some scholars argue that the radically altered lifestyle, owing to the lockdown measures – imposed to a greater or lesser extent in all European countries – may have a beneficial health impact. Most of the adult European population is currently spending much more time at home, in close family contact with flexible or reduced working hours.<sup>5</sup> The de facto reduced exposure to some major stressors, such as workplace-related stress or burnout and health risk factors such as air pollution, traffic, and sleep deficit may result in reduced incidence of several acute pathologies and thereby explain, at least to some extent, the decreased demand of emergency care services.<sup>5,6</sup> In addition, the wide application of telemedical services in several European countries, may have contributed to the prevention of many otherwise unnecessary ER visits. Substitution of ‘in person’ visits to the doctor with video consultations is increasingly common in the COVID-19 era, whereas people with conditions that need tertiary care either consult their specialist team directly or receive treatment at home.<sup>6</sup>

**Table 1**

Possible ER and HS indicators for assessment of reduced ER visits.

Indicators	Interpretation
Number of prescriptions being issued for chronic diseases (comparing status before – and during COVID-19 epidemic)	Is in accordance with general health services usage/demand and can reflect also trends in ER visits
Average waiting time (comparing status before – and during COVID-19 epidemic)	Reduced average waiting time might be indicative of lesser number of patients with ER. This indicator should be considered together with the variable ‘Number of staff on sick leave or absent’ to obtain a clearer picture. For example, average waiting time might be longer even if the number of ER patients is less if there is lack of staff.
Average ER patient’s acuity level (comparing status before – and during COVID-19 epidemic)	Increased average acuity level might be suggestive of delay in presentation (due to hesitation or use of telemedical services)
% of patients admitted after presenting to ER (comparing status before – and during COVID-19 epidemic)	Proxy of severity of presentations/delay in presentations
Number of staff on sick leave or absent due to COVID-19–positive test result and/or high-risk exposure, disaggregated by specialty	Proxy of available manpower for managing acute pathologies, proxy for well-grounded fear of patients to interact with health system, proxy for impact of on health workforce
Ketoacidosis incidences in diabetics (comparing status before – and during COVID-19 epidemic)	Increased number of diabetic ketoacidosis ER admissions suggests either dysregulation of disease due to disrupted access to health services or delayed presentation to ER due to fear for COVID-19 infection
Number of strokes beyond the thrombolysis window (comparing status before – and during COVID-19 epidemic)	Increased number (absolute or %) might be suggestive of delayed ER presentation
Number of percutaneous coronary interventions (PCI) > 12 h from symptom onset (comparing status before – and during COVID-19 epidemic)	Increased number (absolute or %) might be suggestive of delayed ER presentation
Number of registered cardiac arrests with non-shockable rhythm (comparing status before – and during COVID-19 epidemic)	Increased number (absolute or %) might be suggestive of delayed ER presentation
Number of registered cases of perforating appendicitis (comparing status before – and during COVID-19 epidemic)	Increased number (absolute or %) might be suggestive of delayed ER presentation

ER, emergency room; HS, health system.

On the other hand, there is increasing evidence that suggests underusage of ER within the context of the COVID-19 epidemic. In accordance with a recently reported case series from Italy, six of twelve non-COVID-19-related critically ill children were admitted in intensive care unit and four died owing to delayed transfer to the hospital as a result of fear of infection with SARS-CoV-2.<sup>1</sup> Similarly the lives of cardiac patients and patients with cancer have been put at grave risk owing to the shift of healthcare priorities in the response of COVID-19.<sup>1,4</sup> In addition, health authorities in England and Spain report significant reductions in patients treated in ST-elevation myocardial infarction networks and interventional cardiology units, as well as a significant drop in heart attack attendances.<sup>3–7</sup> This might relate to hesitance of patients calling ambulances and/or visiting ER rooms, as well as shortages of key staff performing such interventions. Health systems (HSs) are increasingly deprived of a significant number of healthcare workers of key specialties who are either directly affected or suspected to be affected by COVID-19, are in quarantine owing to high-risk exposure to COVID-19-positive patients or have been reassigned to work with COVID-19 cases. This fact further debilitates the HSs capacities to provide timely diagnosis and management of acute cases. Finally, as the COVID-induced health crisis leads to an unprecedented economic crisis, underusage of HS due to deprioritization of health needs over economic needs may also offer a further explanation.

To be able to better assess the phenomenon of reduced ER visits and verify or reject the formulated hypotheses, we suggest close monitoring of trends of sensitive ER and HS indicators at the national and subnational level, with a special focus on vulnerable or at risk groups such as migrants, the elderly and individuals with other underlying conditions. Close monitoring of the number of healthcare workers dropping out due to COVID-19 infection or high-risk exposure to a COVID-19-positive patient, might also shed some light on the phenomenon. Finally, monitoring of incidence trends of certain acute pathologies that have been described as proxies of delayed ER presentation might also be of help in interpreting the underlying causes of the reduced ER visits.<sup>8</sup> In Table 1, we propose indicators that might prove useful in this exercise.

## Conclusion

ER has been often described as ‘a room with a view’ into healthcare system as it has been recognized as a proxy of their performance.<sup>8</sup> At this point, it is unclear whether the reduced ER visits being lately documented in numerous European countries reflect underusage of ER services, decreased demand or both. Close monitoring of sensitive ER indicators, number of COVID-19 affected and suspected healthcare workers, as well as of trends of certain acute pathologies may help to understand the observed phenomenon. We are currently putting in place actions to be able to collect information on these indicators in several major hospitals (COVID-19 referral and non-referral ones) in Greece, to provide some further insight into the matter. We believe, that similar efforts by researchers from other European countries are highly recommended.

Should underusage of ER services be verified, swift public health response focusing on community-based care, home care and intense health information campaigns is required, as in analogy to other epidemics in the recent past<sup>9</sup> indirect health implications of the COVID-19 epidemic might by far surpass the direct health damage inflicted by the disease itself to the general population. As the COVID-19 pandemic evolves, major setbacks in key health

areas such as maternal and child health, particularly in low- and middle-income countries, might occur.<sup>10</sup> Therefore, national budgets for health expenditure in 2021 should be significantly increased as higher health costs are likely to occur owing to forgone care in the first half of 2020.

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