



SHORT REPORT

GENERAL/SURGERY/INTERNAL

Telemedicine and the 2019 coronavirus (SARS-CoV-2)

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Abstract

In 2020 during the CoronaVirus Disease19 (COVID19) pandemic caused by da SARS-CoV-2, the weakness of e-health (electronic health) (ie the lack of direct contact between physician and patient) may prove to be a strength, given the high contagiousness and relative lethality of the virus. In Italy the lack of preparation for supporting the patient load (shortage of personal protection devices, shortage of Intensive Care Unit) beds in comparison with other European Countries, and the poor early diagnostic and therapeutic activity has led us to suggest a project that uses an online platform between General Practitioners and patients in order to reduce moving infected individuals and to perform the diagnosis and treatment early on.

Telemedicine consists in using ICTs (Information and Communications Technologies) for sending and receiving clinical content that is part of the e-health world.

Let us remember that Telemedicine also offers interesting possibilities of online training.

These same possibilities are offered by ICTs with University and school education.

Together with m-health (mobile health), this may be fundamentally important in the management of the 2019 Coronavirus Disease (COVID19) variant of epidemic (pandemic).

The high contagiousness of this variant of Coronavirus, named SARS-CoV-2, which seems to have started in the city of Wuhan, Hubei province (China), and the possible involvement of the lower respiratory tracts, same as with the SARS and MERS variants, require special attention in order to contain the spread.¹

The incubation period seems to be a maximum of 14 days.²

In Italy, as a result of the shortage of protective means (masks, face shields, gloves, suits, and gowns), the shortage of Intensive Care Unit (ICU) beds, and the shortage of early diagnosis activities and therapeutic approach, approximately 29 000 patients have died to date and approximately 10% of Healthcare Personnel has been infected, with more than 150 Physicians who have died from COVID19 (May 8, 2020).³

If we analyze the number of ICU beds in Italy (8.5/100 000 inhabitants) and we compare it with that of Germany (34/100 000 inhabitants), we understand the substantial difference in the

approach with the most severe patients. This hospital equipment together with Germany's elevated economic investment, allowed them to better map and treat the population that is infected and ill.

With all the disadvantages mentioned herein, Italy tried to adopt a "hub and spoke" model, where the General Practitioner (GP) is contacted via telephone by the patient (m-health) who is asked a few fundamental questions (symptoms, travels, contacts, past medical history which in any case should already be known, and therapies in progress). With this information the GP decides whether to perform the diagnostic tests for COVID19.

The samples must be taken at the home of the suspected patient, in order to limit the spread especially within hospitals or healthcare facilities in general. While awaiting the results, the patient and cohabitants remain under quarantine.

If the result is positive and the symptoms limited, the patient undergoes quarantine (14 days), along with the cohabitants. Those who are infected and ill are instructed to promptly inform the GP if clinical conditions worsen.

M-health also allows for the elderly who have difficulty using e-health to be adequately cared for, given that they are at greater risk in relation to their comorbidities.

E-health should ideally intervene between the GP and the Hospital of reference in order to be able to have useful indications concerning who to hospitalise and where, with any therapeutic indications and traceability of communications.

It is clear that currently the diffusion of e-health is still limited, therefore it is quite probable that in general GP and Hospital liaisons are not adequately organised, with obvious issues with communication and traceability of the same.

The possibility of avoiding direct contact between patients and healthcare professionals during the diagnostic phase and then during the clinical course (if uncomplicated) is a strength for e-health in cases of easily transmissible diseases, unlike with non-transmissible and chronic illnesses (ischemic heart disease, high blood pressure, chronic lung diseases, etc) where the lack of direct contact between the physician and the patient could be considered a negative aspect.

Considering that the concrete use of m-health affects the difficulty in being able to contact the GP during peak times because of telephone lines being overloaded we thought about using digital platforms with the possibility of using both m-health and e-health as an alternative mean through which the Physician and the patient can schedule a consult. Through this information management system, the GP remains more protected and is able to better organise his or her work, for example, by providing one or more daily time slots of availability for urgent consults.

We have prepared a mobile application with the objective of testing an even more advanced hypothesis for the future, in essence the GP and patient e-health connection.

DaVinci Salute is a mobile health application that allows people to video call or chat with a doctor about their symptoms via their smartphone. From thorough health monitoring to treatment-driven data, the app is an all-in-one solution for patients seeking primary care anywhere, at any time.

On January 31st 2020, the Italian Council of Ministers declared a 6-month state of emergency as a consequence of the health risks related to the New Coronavirus outbreak. Using its strength of experience with mobile and electronic health, *Davinci Salute* took the initiative to freely provide its digital platform, with the aim to support the healthcare system in the management of possible patients. With the help of the app, patients showing symptoms of COVID-19 are able to remain at home and video call or chat with a doctor free of charge, thanks to a remote network of GP and Paediatricians (even if the paediatric patients are few) who generously volunteered to

review people's Coronavirus symptoms through the "DaVinci Salute" App. In order to receive a phone consultation patients are required to provide symptoms and the type of contact preferred (video, audio, chat), after which the first GP available will get back to the patient within the targeted time of 20 minutes.

The same platform also foresees the provision of psychological support as well as obstetric support for pregnant women.

Once the COVID19 epidemic/pandemic period has passed, we will provide an account of this experiment.

The supposition for the future is to use a series of dedicated and validated platforms, in order for the various healthcare components to communicate with each other for the purpose of optimising resources and reducing the risk of spread during a future epidemic, even for the common flu, thus being able to follow up with those infected as well as those not seriously ill using ICTs.

Obviously ICTs cannot replace a direct relationship with the patient in every situation; however, under special circumstances they can play a significant role even in the safety of the operators.

DISCLOSURE

The authors declare no conflict of interest related to this publication.

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