Human factors and ergonomics at time of crises: the Italian experience coping with COVID-19

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Abstract

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Several of the key organizational issues that we have had to face with the emergence of COVID-19 crisis are related to Human Factors/Ergonomics (HFE) and the safety culture. During the crisis the main activities of the healthcare services have been profoundly affected. Patient safety and risk management units have also experienced the need to adapt rapidly. What can we do as HFE experts, now that the scenario has completely changed? We contend that:

- We can favour and support the heuristics that are applied to manage the load of psycho-cognitive stress;
- We can observe, collect strategies and develop analytic schemes, thereby creating a memory of the organization for improvement in the future;
- And we can support in educating and engaging the public.

This crisis has forced the community of healthcare experts to broaden their reflections: for the future to come, our communities of experts in the field of risk management HFE, quality and safety of care and public health should play together an important role from the very beginning, from the time of peace.

**COVID-19 has profoundly affected healthcare systems**

In this very difficult time, the Patient Safety Centre, as a regional organization aimed at promoting patient safety, in collaboration with the network of risk
managers of the public and private health sector, is trying to support the healthcare system, and especially the clinicians at the sharp end. We do this using our expertise in Human Factors/Ergonomics (HFE) and communication, which characterizes our approach to safety and the quality of care.

Several of the key organizational issues that we have had to face in the emergence of this crisis are related to HFE and a safety culture. Due to the rapid diffusion of the virus and the surge of patients that suddenly were in need of high levels of assistance, the main activities of the healthcare services have been profoundly affected. In this situation of pandemic, the drivers for activity planning within main healthcare facilities have become:

- Keep the patient safe from infection
- Keep the patient with infection safe
- Keep health workers safe
- Keep the service going
- Meeting the needs of citizens

Patient safety and risk management units have also been affected and have experienced the need to adapt rapidly to the new needs and opportunities of the reorganised healthcare workforce. In this situation of high stress, the well-known critical points of the system as well as the unknown ones, not only emerged but also have been amplified.

The challenge for us
Therefore, given the rapid emergence of the pandemic, what can be the role of the HFE expert in such a situation? What can we do as HFE experts, now that the scenario has completely changed?

On the one hand, we can favour and support the heuristics that are applied to manage the load of psycho-cognitive stress, by providing tools for dealing with the cognitive overload of the emergency and prevent burn-out. On the other hand, we can observe, collect strategies and develop analytic schemes, thereby creating a memory of the organization for improvement in the future. It is by understanding what is happening today that tomorrow's health system will be built.

**Our response in support of the new way of working**

The network of Risk Managers acted as link between the need to provide health workers with information, guidelines and protocols sent daily from the international, national and regional levels, and then translating the information into useful accessible information and operative actions to be implemented at the frontline.

We adapted WHO material dedicated to the protection of health workers and facilities and transforming the documents, guidelines and protocols produced by our national and regional health institutions, into practical tools that could be used in specific care settings (see Box Tools to support citizens and front line workers during the epidemic).
Tools that turned out to be fundamental for supporting clinicians from the cognitive point of view included:

- An algorithm for the correct procedure for ventilation in ICU
- Moments for hand hygiene
- Correct practices to prevent and manage infection in nursing homes
- Posters for the correct use of PPE
- An algorithm of the procedure for putting on and removing PPE. Training for putting on and removing PPE was shown to be critical, as it requires a stepwise process with a number of complex movements that can be easily forgotten.

The issue of PPE has been a critical challenge from the very beginning of the emergency. There was no single coordination line nor centralized control of PPE. There was no national guideline in accordance with international indications for the appropriate use and management of PPE.

Finally, it would have been important to define from the beginning the most vulnerable categories of people: the clinical staff, the elderly and fragile populations, with resultant application of specific strategies to protect them, such as keeping at home from the very start, providing the right equipment to healthcare workers, and undertaking widespread screening on all the healthcare providers.
The regional community of Risk Managers also promoted some proactive activities in their support to the emergency. This included:

- Adapting our reporting and learning systems with new ways of tracing information to overcome the outbreak, in order to respond and be resilient;
- Assessing risks for patients and providers during reorganization of clinical care pathways and to quickly redesign the usual working methods;
- Continuous updating of procedures for quality and safety systems;
- Continuous monitoring of the correct application of infection prevention practices;
- Promoting the need for psychological support to citizens and to healthcare workers.

Meeting the needs of citizens

Another front where we have made an important contribution is making the community aware of the important role that they can play in stopping contamination, by providing them with the fundamental behavioural information. We established a communication campaign to diffuse all the key messages related to basic health behavioural rules, by adapting the WHO visual alerts, and by putting into a clear-to-understand format all the information spread by the national health authorities. We disseminated through institutional channels, social media and the patient advocacy network the information regarding hand and respiratory hygiene, social distancing, hygiene for indoor
how to use protective equipment and to set up a dedicated phone number to call, in the event of any symptoms onset for a preliminary triage.

**Our broader reflections**

The crisis will be long; therefore we need to face today’s situation with awareness and unity, and with an eye to the future. It is really important to give maximum transparency to what we are doing in the health service and to have consistency between internal and public communications, to keep the morale of the worker force high and ensure the confidence of the population in the healthcare institutions. Safety comes first, especially in times of crisis. This crisis can also be a great opportunity to understand our points of strength and our points of weakness in managing an unexpected crisis as specialists in service of the public health.

While facing this emergency, it’s impossible for us not to go back to 2016 and the Ebola epidemic. At that time only isolated cases or secondary infections occurred outside Africa. At that time, what we were seeing in Africa was not a problem that would have interested high resources countries.

Paradoxically, at that time our Centre was carefully studying all of the documents that the WHO was producing to support countries and healthcare systems to prepare for an emergency, with a toolkit for evaluation of the preparedness of our systems, checklists for evaluating logistics and medical devices and human resources, and plans for community engagement. We had
very well in mind that “plans for war” should have to be defined, tested, simulated, spread and adapted during "peacetime". But at that time, a pandemic or health emergencies such as this one, were problems that did not have anything realistically to do with us.

We believe that for the future our communities of experts in the field of risk management HFE, quality and safety of care and public health should play an important role from the very beginning, from the time of peace.

HFE principles can be a guide to coordinate interactions among different stakeholders of the emergencies, simulation sessions can be the way to learn how to act together when the scenario becomes real. We also believe that when the emergency does end, profound reflection will have to be done on what “global health” really means, as well as what the meaning is of “one health”.