

Technology and Care Load in Future Hospitals

La tecnología y la carga de cuidado
en los hospitales del futuro

A tecnologia e a carga de cuidado
nos hospitais do futuro

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A constant question world health professionals worldwide ask themselves is How do we better look after more patients that require new services with humanized care and better conditions for doctors? This question arises the health care systems pressures, where work overload for health professionals and the elevated care cost represent global problems. Specifically, overload is associated with a higher mortality rate and a population's lower quality of life (1).

Healthcare processes digitalization is inevitable and the requests to humanize the services is a latent need. This is reflected in Sustainable Development Objective 3 on health and well-being which aims to guarantee a healthy life and to promote well-being at all ages (2).

Prospective studies show that 74 % of healthcare professionals predict that in the next ten years, there will be a nurse shortage, while 68 % predict a shortage of doctors. Additionally, 70 % of the interviewed care professionals believe that digital health technologies will have a positive impact on transforming health (3). However, this digital health transformation process is not easy and there are important barriers to overcome.

That said, it must be considered that nursing healthcare models should be focused on addressing patients' physical, psychological, social, spiritual, and familial needs. This is a hard-to-accomplish requirement when there is an unfavorable patient-nurse relationship; additionally, the processes require that nursing professionals register during long periods and far from the patients' headrests. Having a complete and timely registry of care activities is necessary and obligatory but the long hours in front of a screen are detrimental to the patients' and the health professionals' health.

This phenomenon implies the dehumanization of care, as scientific literature has shown, occasionally, screens and technology become barriers that hinder a close relationship between patients, caregivers, and health professionals.

The logistics associated with attention is the other relevant axis in this context. After examining the literature about hospital logistics and nursing, we found that most of the proposed models focus on proposing informatics systems that program nurses' shifts using optimization models and algorithms or estimate personnel sufficiency indicators using analytic techniques. However, there are numerous questions left unsolved, for example: What is the adequate number of patients per nurse? Concerning that, we know there is no international standard. In fact, in several countries, laws on this relationship vary drastically. Likewise, how should patients be assigned to nurses? Currently, few models allow predicting the load work and balancing patient allocation. In most services, the personnel use their experience or apply division rules that aim to be equitable but are rarely objective (1).

Some institutions use informatic tools to manage nursing loads, but most of the solutions are limited to assigning work schedules and registering absences.

Now, with the appearance of artificial intelligence and data analytics, the panorama is different because technology allows capturing big quantities of data and information, identifying patterns, and suggesting actions for certain situations. However, far from being a magical solution, its challenges must be overcome to adopt these solutions.

The question left to answer is How to capture data that is relevant to understanding and predicting nursing care load? We understand care load as the sum of the activities' physical, cognitive and time effort. To predict this load, it is necessary to capture the clinical and logistic variables associated with it, such as the time required to do the activities. Doing so is no easy task considering patients' privacy must be protected. Previous research proposes doing field observation, but it involves bias risk from the data observer, and its costs are considerable, which is why doing it for extended periods is unsustainable.

Also, fomenting technology's adoption must be addressed as literature shows that adoption is in most cases challenging. Some conceive technology as a burden when they do not see its use or do not perceive how it contributes to productivity. Indirect tasks associated with information registries for extended periods are associated with professionals' anxiety and stress. To solve this challenge, the user must be involved in the technologies design processes and rethink them beyond a computer; for example, through the use of voice recognition technologies, smartwatches, and augmented reality goggles, among others.

Lastly, it should be asked: how must the impact of technology use be determined? Understanding technology's impact is equally a research challenge because these interventions may affect user experience regarding health services and patients' quality of life, it may reduce services costs and even better professionals' working conditions. However, understanding the impact of the technology's use involves a thorough measurement of the indicators associated with the issue, field observation, measuring the perception of those involved, and long-term monitoring of the processes and their changes.

To conclude, it may be said the recent advances in technology and information systems associated with artificial intelligence are more available to facilitate care and other activities at hospitals. Nevertheless, determinant challenges persist in their implementation and change management. Technology must be friendlier with humans, especially in a process as human as health care. Surely, in a few years, these design challenges will be solved. The question is: Are health professionals ready to adapt to new technologies?

4 Referencias

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