



THE CHALLENGE OF KNOWLEDGE MANAGEMENT IN GLOBAL HEALTH IN PANDEMIC TIME

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In 1948, with the creation of the World Health Organization (WHO), the Right to Health gained a little more global prominence, since the very purpose of the international entity is to guarantee the highest level of health for all human beings, advocating that the state of physical and mental well-being does not only consist in the absence of diseases or illnesses, but mainly when a set of values and principles are established and available to all individuals, anywhere on the planet (*WHO | The Right to Health*, 2012).

Health in this new millennium must be seen as a global problem. The globalization of health is a good for which we must work in an explicit and programmed way, as it becomes a desirable social purpose, either for its intrinsic value or as a symbol of the predominance of human values over other interests (Oliveira & Cutolo, 2018). In a global context with rapid changes in the disease patterns, the best understanding of the Health context is to consider the broad spectrum of the ecosystem containing the social, economic determinants of health and the diversity of institutional agents, given the considerable change in the global health scenario in recent years (Kickbusch & Berger, 2010). The conception that health should be seen from a comprehensive and plural perspective brings other aspects closer to its effectiveness.

When we reflect on health, it is considered as a global public good: that it is not exclusive, that is, that no one or any collectivity is excluded from its possession or consumption; and that its benefits are available to everyone. There is also the apparent consensus that health is not competitive, and that there is no rivalry, that is, a person's health cannot be at the expense of excluding other people (Buse & Waxman, 2001; Haines et al., 2009; Hartz, 2012; Vance et al., 2009).

In the health spectrum, it carries challenges and opportunities in the globalization process, which is the catalyst for the evolution of the term "Global Health". Global health can be understood at the same time as a condition, an activity, a profession, a philosophy, a discipline, or a movement. However, it should be considered that there is no consensus on what Global Health is, nor a single definition, and its field of action has inaccurate limits (Fortes & Ribeiro, 2014), however it is indisputable that we live in health in times of globalization (Koplan et al., 2009).

The 21st century is also known as the information age of data. The age of knowledge. We live in an exponential age of data never seen in history. The management of these data for health is a constant challenge. Over 2.5 quintillion bytes of data are created every single day (see <https://www.domo.com/solution/data-never-sleeps-6>). It is estimated that 43% of these data are from the health area and 47% of these are related to public health. It's a Big Data of Health (Magalhaes, JL & Quoniam, L, 2015; Raghupathi & Raghupathi, 2014). Initially, this exponential volume of data addressed the criteria of the 3Vs: Volume, Variety and Velocity (Laney, 2001). Further on, 2 more Vs were added: the attributes of Veracity and Value. Some authors even attribute 3 other Vs, Veracity, Versatility and Viability, where the combination of all "Vs" generates the "V" of Value (Aleixo & Duarte, 2015)

This deluge of data in the 21st century requires a different analysis. In this new era of knowledge, the data available for Global Health are immense and must be considered considering global health situations that are unprecedented in history. Global health is the understanding of health care in an international and interdisciplinary context. It includes the study, research, and practice of medicine with a focus on improving health and health care equity for populations worldwide. Global health initiatives consider both medical and non-medical disciplines, such as epidemiology, sociology, economic disparities, public policy, environmental factors, cultural studies, etc. (WHO, 2021). So, it's important thinking about new practices in applications for the value of information in the health area making it completely applicable and essential for innovation and technology trends for global health (Lawrence & Giles, 2000).

The world faced the Covid-19 pandemic, declared by the World Health Organization (WHO) on March 11, 2020. This new Coronavirus-derived pandemic was started by an outbreak in China in December 2019 and quickly spread throughout the world. To break the disease, it is vitally important to have accurate information for decision-making by authorities around the world (Who, 2020). With the need for research and development to get a quick response, it became clear that scientific investigation is no longer linear.

The paradigm shift brought new ideas very quickly in the knowledge era. It is noteworthy that the first changes – although apparently quick – took years to develop. An example is the issue of the sequencing of HIV (human immunodeficiency virus) taking 15 years, while the sequencing of SARS (Severe acute respiratory syndrome) was achieved in just 21 days (*Projeto Genoma Humano: Um Retrato Da Construção Do Conhecimento Científico Sob a Ótica Da Revista Ciência Hoje*, n.d.; *The Digital Universe in 2020: Big Data, Bigger Digital Shadows, and Biggest Growth in the Far East* by John Gantz and David Reinsel Sponsored by EMC, 2012). However, the same happens in times of COVID-19; where it is observed that in about just 06 (six) months, the sharing of network data and scientific and technological information has grown exponentially.

Coronaviruses are a group of large, enveloped, positive-sense, single-stranded RNA viruses belonging to the order Nidovirales, family Coronaviridae, subfamily Coronavirinae (Bastos, 2020). In late 2019, a new type of coronavirus was discovered, provisionally called 2019-nCoV and later called SARS-CoV-2, due to its similarity to SARS-CoV. The disease caused by the virus was officially named Coronavirus Disease 2019 (COVID-19) by the WHO (*Coronavirus Disease, 2019*). Saxena et al (2020) and Bonilla-Aldana et al (2020) describe that until 2019, only six coronaviruses caused disease in humans: HCoV-229E, HCoV-OC43, HCoV-NL63, HCoV-HKU1, coronavirus with severe acute respiratory syndrome (SARS -CoV) and coronavirus with respiratory virus in the Middle East (MERS-CoV) (Bonilla-Aldana et al., 2020; Saxena, 2020). The first four are endemic locally and have been mainly associated with mild and limiting diseases, while the last two can cause serious illness. SARS-CoV and MERS-CoV are beta-coronaviruses and are among the pathogens included in the World Health Organization's Model List of Priority Diseases (Magalhães et al., 2020).

Never in history has the sharing of scientific and technological data allowed for a rapid response to the health of humanity. The product was available in about 01 (one) year for Covid019.

This fact highlights how the Knowledge Management requires the involvement and support of all the company's stakeholders to preserve, transmit and develop knowledge. Indeed, it is the individuals who are at the centre of the creation of value and who hold the keys to the success of such a project. The management of the knowledge and know-how of the company is therefore not universal, it depends strongly on the culture of the country in which it is practiced (Balmisse, 2006). In this sense, to identify, classify, measure, disseminate and training competencies are essentials to aid strengthen to the Researcher, Development & Innovation in Management of Science, Technology, and Innovation in health.

In this sense, in the age of knowledge, intellectual capital has played an important role in economy and business, a key factor for competitiveness and, therefore, for economic and technological development. In high-density areas, such as pharmaceutical, aerospace and telecommunications, among others of equal weight and impact, knowledge becomes the most important asset (Lastres & Albagli, 1999).

New trends influence the industrial development of a country, such as knowledge, a main resource, and learning, a central process. Therefore, it is essential to broaden the base of expertise in human resources and hence, increase the potential of innovation (Lastres, HMM & Sarita, A, 1999b).

Nevertheless, public health issues and problems are immense and require a multidisciplinary workforce. They must be considered and analysed in the context of the real conditions of each culture, developed using Research, Development, and Innovation strands, and through cooperation networks to disseminate the knowledge generated to achieve local development and create innovation.

The 21st century has brought new challenges and opportunities due to the growing volume of new data added to the Web every day. The situation is no different for scientific and technological development, especially in the field of health. Thus, it is important to constantly develop new methodologies for identifying, extracting, and processing data for better knowledge management in global health.

According to Magalhaes et al (2022), contemporary societies are interconnected at a global scale, while at the same time struggle to preserve national and local economic, social, political and cultural life. These efforts are irrelevant if the most diverse ecosystems are not protected and preserved as well. The COVID-19 pandemic is as a window of opportunity to show the need to rethink scientifically and politically public health emergencies, so that the same issues and mistakes of the past can be avoided when another health threat arises (Correia, 2020).

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