Revista de Ciencias Médicas y de la Vida

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Special Colaboration

# Health Information Systems, relevance and realities in the face of the SARS-COV-2 virus pandemic

## *Los Sistemas de Información en Salud, relevancia y realidades ante la pandemia del virus SARS-COV-2*

## *Systèmes d'information sur la santé, pertinence et réalités face à la pandémie du virus SRAS-COV-2*

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**ABSTRACT**

Health Information Systems become a transforming agent in the pandemic scenario of the SARS-COV-2 virus. The interpretation of the health information is useful for the diagnosis, planning, evaluation, comparison and monitoring of the health situation. Health Information Systems are relevant and real in the face of the SARS-COV-2 virus pandemic. Health Information Systems allow the integration and application of knowledge, to process the information and the health decision-makers updated for decision-making based on the information they will have available. They allow equity in health to be a reality, to eliminate all differences and reduce those that are avoidable and unfair in access to health services; by placing the patient, family and community at the center of the analysis; It guides better management of patient trajectories throughout the health system so that it is sustainable. The relevance and realities of Health Information Systems, in the face of the SARS-CoV-2 virus pandemic, support the execution of integrating protocols for action against the virus. They are also useful in the design of effective and efficient health intervention actions, to achieve control of the virus in the individual, the family and the community, with a health and inclusive approach.

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Recibido el 29 de diciembre de 2022. Aceptado el 09 de febrero de 2023.

**Key words**: health information, health information systems, SARS-CoV-2 virus

**RESUMEN**

Los Sistemas de Información en Salud se convierten en un agente transformador del escenario pandémico del virus SARS-COV-2. La interpretación de la información en salud que se procesa, es útil para el diagnóstico, planificación, evaluación, comparación y monitoreo de la situación de salud. Se hace pertinente fundamentar en el presente comentario las relevancias y realidades ante la pandemia del virus SARS-COV-2 de los Sistemas de Información en Salud. Es una realidad que los Sistemas de Información en Salud permiten la integración y aplicación de los conocimientos, para procesar la información y mantener actualizados desde la ciencia a los decisores de salud de un territorio

dado, para la toma decisiones con base a la información que tendrán disponible. Permiten que sea una realidad la equidad en salud, para eliminar todas las diferencias y reducir aquellas evitables e injustas en el acceso a los servicios de salud; al colocar al paciente, familia y comunidad en el centro del análisis; orienta hacer una mejor gestión de las trayectorias de los pacientes a lo largo del sistema de salud para que sea sostenible. Las relevancias y realidades de los Sistemas de Información en Salud, ante la pandemia del virus SARS-CoV-2, sustentan la ejecución de protocolos integradores de actuación contra el virus. Son útiles, además, en el diseño de acciones de intervención sanitaria eficaces y eficientes, para lograr el control del virus en el individuo, la familia y la comunidad, con enfoque salubrista e inclusivo.

**Palabras clave**: información en salud, sistemas de información, virus SARS-CoV-2

***RÉSUMÉ***

*Les systèmes d'information sur la santé deviennent un agent transformateur dans le scénario pandémique du virus SARS-COV-2. L'interprétation des informations de santé traitées est utile pour le diagnostic, la planification, l'évaluation, la comparaison et le suivi de la situation sanitaire. Il est pertinent de fonder sur cette remarque la pertinence et les réalités face à la pandémie du virus SARS-COV-2 des Systèmes d'Information de Santé. C'est une réalité que les systèmes d'information sur la santé permettent l'intégration et l'application des connaissances, pour traiter l'information et tenir les décideurs en santé d'un territoire donné à jour de la science, pour une prise de décision basée sur les informations dont ils disposeront. Ils permettent de faire de l'équité en santé une réalité, d'éliminer toutes les différences et de réduire celles qui sont évitables et injustes dans l'accès aux services de santé ; en plaçant le patient, la famille et la communauté au centre de l'analyse ; Elle oriente une meilleure gestion des trajectoires des patients dans l'ensemble du système de santé afin qu'elle soit pérenne. La pertinence et les réalités des Systèmes d'Information de Santé, face à la pandémie du virus SARS-CoV-2, appuient l'exécution de protocoles intégrateurs d'action contre le virus. Ils sont également utiles dans la conception d'actions d'intervention sanitaire efficaces et efficientes, pour parvenir à contrôler le virus chez l'individu, la famille et la communauté, avec une approche sanitaire et inclusive.*

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Recibido el 29 de diciembre de 2022. Aceptado el 09 de febrero de 2023.

***Mots clés:*** *information sur la santé, systèmes d'information sur la santé, virus SARS-CoV-2*

## EXHIBITION OF THE COMMENT

The SARS-CoV-2 virus pandemic has claimed thousands of human lives in a short time. Currently, the world is suffering one of the worst periods in contemporary history, in terms of loss of human life. Only surpassed, until now, by the warlike confrontations of the Second World War, in the first half of the 20th century.

Epidemics are threats to the lives of human beings, which have accompanied society since the Cro-Magnon ancestors. The person responsible for this global tragedy is the appearance of a new epidemic caused by the SARS-CoV-2 virus, at the end of 2019 in China. The virus has been maintained over time with an increase in cases around the world. The factors that lead to the disease and its rapid spread in a short time, is what leads to the declaration of a state of pandemic in March 2020 by the World Health Organization (WHO).[1]

To combat the pandemic caused by the SARS-CoV-2 virus, which has caused a global health emergency situation, it is necessary to have updated, truthful, comprehensive and timely health information for decision-making to deal with the pandemic. Effective, efficient manner with a salubrious approach.

According to Oliver,[2] the Health Systems, due to their mission, coverage and characteristics, as well as the strategic and programmatic approach as a vision, require a constant flow of information. It allows maintaining a high level of knowledge of each of the activities that are carried out at all levels for the conduction of the management processes in the services. Thereby, the flow of health information needed by decision-makers provided by the Health Information Systems (SIS) is reflected.

According to Gutierrez "The SIS, allow through actions and operations carried out by the subject, with the use of prior knowledge in an area of knowledge to manage, collect, organize, process and interpret and validate health information".[3] Which It enables decision-making to solve problems in the health sector. They also offer updated, truthful, comprehensive and timely health information, which allows decision-making to face the pandemic.

The SIS become a transforming agent in the pandemic scenario. The interpretation of the health information that is processed in them is useful for the diagnosis, planning, evaluation, comparison and monitoring of the health situation of the individual, family and community.

They constitute the key to adapting protocols, planning health interventions and vaccination against the virus. They support the execution of integrated protocols for action against the virus, as well as effective and efficient health intervention actions, to achieve control of the virus in the individual, the family and the community with a health and inclusive approach.

In the face of the SARS-CoV-2 virus pandemic, it is necessary to give relevance to the SIS, and apply this knowledge to current contexts. The SIS, having a dynamic character, allow evaluating and drawing up new strategies.

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It is a reality that the SIS allow the integration and application of knowledge, process information and keep up-to-date from science. The health decision-makers of a given territory must rely on the analysis of the health situation for diagnosis and decision-making based on the information that they will have available.

The SIS are satisfied with the knowledge acquired about a fact. They are in charge of offering the information required by health decision makers. Within the actions there is not only collecting, organizing, processing, tabulating; validate health information, but, above all, the analysis and interpretation of information through clinical epidemiological indicators.

In this regard, the authors state that the SIS have become a necessity, which is why it should be claimed more than ever. They allow us to visualize which public health policies have been the most effective, when it comes to controlling the spread of this disease. They provide exceptional quality information for decision makers, which favors the satisfaction of the population.

The interpretation that the numerical data resulting from the information that is processed in the SIS for the diagnosis, planning, evaluation, comparison and monitoring of the health situation of the individual, family and community, must describe the objective reality. The message must be clear, understandable, and explicit between the sender and the receiver so that their interpretation is efficient, effective, and useful:

Health information must have the following quality attributes:[4]

- Integrity: all information must be complete with no omissions, complete, to be processed in the SIS,
- veracity: the information must be truthful, with a reduction in errors and be as close to objective reality,
- reliability: it requires establishing margins of errors or confidence intervals of the data it offers,
- Opportunity: the information must be on time to be processed in the SIS at any of the three levels at which it is generated.

The analysis of the indicators in a critical and reflective way, allows to carry out actions to prevent environmental factors, related to the pandemic, in a world that will no longer be the same. Other important elements to win the battle against the pandemic are health promotion and education, the transformation of health behaviors and lifestyles, the quality of care in health services, and human biology.

They allow equity in health to be a reality, to eliminate all differences and reduce those that are avoidable and unfair. Ensure that no one is disadvantaged in access to health services. That all members of society can participate in population health interventions, vaccination against the SARS-CoV-2 virus. On the other hand, the SIS support the immediate, agile and coordinated exchange of data, the prioritization of care, access and response. Above all, to those in vulnerable situations.

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Equity and social justice, with logical reasoning and critical judgment, allow decision-making to have an effective and efficient focus on the level of individual, family and community health. Decisions that should not operate in isolation, without a shared vision and information or a coordinated attack plan.

Cofiño[5] affirms that the importance of the place where we are born and grow up, the way in which we relate to each other and our living conditions on our health is well known. The health and well-being of individuals and communities depend on the social, environmental, economic, political, cultural, educational, and geographic and health circumstances of where they live. The unequal distribution of these factors generates health inequalities that can be avoided.

Cofiño's[5] approach is related to social and health determinants. The ability to process information in health with the use of the SIS, and the interpretation of the information, in times of the SARS-CoV virus pandemic, allows evaluating the influence of the determinants, when planning interventions that have a broad impact on improving individual and collective well-being.

Authors such as Benjamin,[6] and Ticona,[7] in the context of social and health determinants, suggest that it is essential to focus on the preparation of the health system with community participation, to protect the health of the entire society. The social and health determinants according to Lalonde,[8] are:

- lifestyle: it is the determinant that most influences health and the most modifiable through health promotion or primary prevention activities (drugs, sedentary lifestyle, diet, stress, dangerous driving, poor use of health services);
- human biology: this determinant refers to the genetic inheritance that is not usually modifiable with the available medical technology (constitution, genetic load, development and aging);
- health system: it is the determinant of health that receives the most financial resources to care for the health of the population (misuse of resources, adverse events caused by health care, excessive waiting lists, bureaucratization of care);
- environment: air, water, soil and environmental pollution (physical, chemical, biological, psychosocial and sociocultural).

Faced with the new reality, the battle against the pandemic has led the world to a high mortality of human lives. It has also had an unfavorable impact on the economy and society. It is necessary to achieve excellence in services and the sustainability of health systems that modify the health status of the individual, family, community, population, environment and society.

Amenares9 and Martin[10] state that, during a pandemic, more than in any other public health situation, the SIS play a significant role. They provide the necessary data and information at the speed that the situation requires. Likewise, they are the key to having evidence, making the most informed decisions possible and adapting policies that allow better intelligence in health actions.

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Decision makers must become aware of the reality that exists in the pandemic stage, the SIS is not a fad, or something that must be done. By making decisions with the analysis and interpretation of health information, they have allowed the creation of tools to visualize the spread of the virus in real time. Taking into account that the SARS-CoV-2 virus mutates and spreads very quickly, which makes it very virulent and lethal.

It also implies a change in the mentality of the entire decision-making process, by placing the patient, family and community at the center of the analysis, so that it is effective, efficient and sustainable. It guides better management of patient trajectories throughout the health system.

The analysis of the SIS allows solid pillars to be established on which:

- project the evaluation of the protocols for diagnosis and treatment of the SARS-CoV-2 virus. for patients, sick, suspects and contacts;
- build and rebuild knowledge about the pandemic, virus behavior and mutations;
- analyze the behavior of sociodemographic, resource, and morbidity and mortality variables and indicators;
- make predictions of the behavior of the virus;
- plan, provide feedback, evaluate programs and health services in the new reality;
- strengthen action on social and health determinants with an essential value of equity in health;
- Execute measures on social determinants with a health approach, for decision-making on the health situation of society (collective health situation analysis process)

In this regard, the Pan American Health Organization (PAHO)11 and the World Health Organization (WHO)12 state that the SIS, through timely access to disaggregated data, allow the correct integration of national and local systems. They provide identification, reporting, case analysis, contacts; the search and early detection of them. In addition, the identification and monitoring of the population at risk.

It is a reality that the SIS are strengthened with the follow-up and monitoring platforms for cases, contacts, quarantine and social isolation. At the same time, these systems guarantee the massive diffusion to the whole society of communications on preventive measures, impact on individual and collective health.

In this context, several authors [13-15] refer to the fact that the SIS play a relevant role today. They contribute to the fight against the pandemic, by introducing smarter solutions to control the virus, with the integration of information and the improvement of the national response in terms of public health.

They register in the area the confirmed, suspected, people under surveillance and those with chronic conditions. All this requires agile mechanisms to obtain information

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efficiently. The results are presented with the use of tables and figures for a better quality of the exposition.

The relevance and realities of Health Information Systems, in the face of the SARS-CoV-2 virus pandemic, support the execution of integrating protocols for action against the virus. They are also useful in the design of effective and efficient health intervention actions, to achieve control of the virus in the individual, the family and the community, with a health and inclusive approach.

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**FINANCING**

No funding was received for the development of this study.

**CONFLICTS OF INTEREST**

No conflicts of interest are declared.

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Recibido el 29 de diciembre de 2022. Aceptado el 09 de febrero de 2023.

Revista de Ciencias Médicas y de la Vida

https://editorial.udv.edu.gt/index.php/RCMV e-*ISSN: 2958-9533*

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