

Humanization of care: challenges after Covid-19 pandemic

Humanização do Cuidado: desafios após a pandemia de Covid-19

Humanización del cuidado: desafíos tras la pandemia del Covid-19

Received: 01/19/2022 | Reviewed: 01/26/2022 | Accept: 02/02/2022 | Published: 02/04/2022

Danilo Rocha Dias

ORCID: <https://orcid.org/0000-0002-9194-8774>
Federal University of Minas Gerais State, Brazil
E-mail: danirocdias@gmail.com

Frederico Santos Lages

ORCID: <https://orcid.org/0000-0002-8885-1138>
Federal University of Minas Gerais State, Brazil
E-mail: fredlages@hotmail.com

Ênio Lacerda Vilaça

ORCID: <https://orcid.org/0000-0001-6706-0866>
Federal University of Minas Gerais State, Brazil
E-mail: elvilaca@gmail.com

Ivana Márcia Alves Diniz

ORCID: <https://orcid.org/0000-0003-4261-0037>
Federal University of Minas Gerais State, Brazil
E-mail: ivanadiniz@ymail.com

Lia Silva de Castilho

ORCID: <https://orcid.org/0000-0001-9648-6815>
Federal University of Minas Gerais State, Brazil
E-mail: liasilvacastilho@gmail.com

Abstract

Face of impacting changes in healthcare after COVID-19 pandemic, an imminent discussion is how to achieve humanization of care with so many safety barriers between healthcare providers and patients. The objective of this study is to propose an operational model to assist in the planning of actions and inspire work fronts in the fight against the Covid-19 pandemic, providing insights for future research and health policies. A search was carried out in PubMed Central using the terms “health care models” and “humanization of care”. Studies that presented conceptual and methodological aspects of health care models were selected, in addition to experience reports and systematic reviews. From the identification of critical elements for the humanization of care, an operational model was developed suggesting the most relevant themes that require solutions and organized actions to face the Covid-19 pandemic and its consequences. The proposed themes were transdisciplinary approach, health technology, cost-effectiveness, equity, social justice, education, health promotion, information access, safety and well-being, resources distribution, sustainability. This model may be useful to organize healthcare actions based on humanization of care, involving society in a collective effort to maintain the quality of care.

Keywords: COVID-19; Humanization of care; Health policy; Comprehensive health care.

Resumo

Diante das mudanças impactantes na saúde após a pandemia do COVID-19, uma discussão iminente é como alcançar a humanização do atendimento com tantas barreiras de segurança entre profissionais de saúde e pacientes. O objetivo deste estudo é propor um modelo operacional para auxiliar no planejamento de ações e inspirar frentes de trabalho no combate à pandemia de Covid-19, fornecendo subsídios para futuras pesquisas e políticas de saúde. Foi realizada uma busca no PubMed Central utilizando os termos “modelos de atenção à saúde” e “humanização do cuidado”. Foram selecionados estudos que apresentavam aspectos conceituais e metodológicos dos modelos de atenção à saúde, além de relatos de experiência e revisões sistemáticas. A partir da identificação de elementos críticos para a humanização do cuidado, desenvolveu-se um modelo operacional sugerindo os temas mais relevantes que requerem soluções e ações organizadas para o enfrentamento da pandemia de Covid-19 e suas consequências. Os temas propostos foram abordagem transdisciplinar, tecnologia em saúde, custo-efetividade, equidade, justiça social, educação, promoção da saúde, acesso à informação, segurança e bem-estar, distribuição de recursos, sustentabilidade. Esse modelo pode ser útil para organizar as ações de saúde com base na humanização do cuidado, envolvendo a sociedade em um esforço coletivo para manter a qualidade do cuidado.

Palavras-chave: COVID-19; Humanização do cuidado; Políticas de saúde; Atenção integral à saúde.

Resumen

Frente a los cambios impactantes en la atención médica después de la pandemia de COVID-19, una discusión inminente es cómo lograr la humanización de la atención con tantas barreras de seguridad entre los proveedores de atención médica y los pacientes. El objetivo de este estudio es proponer un modelo operativo para ayudar en la planificación de acciones e inspirar frentes de trabajo en la lucha contra la pandemia de Covid-19, proporcionando conocimientos para futuras investigaciones y políticas de salud. Se realizó una búsqueda en PubMed Central utilizando los términos “modelos de atención de la salud” y “humanización de la atención”. Se seleccionaron estudios que presentaran aspectos conceptuales y metodológicos de los modelos de atención en salud, además de relatos de experiencia y revisiones sistemáticas. A partir de la identificación de elementos críticos para la humanización del cuidado, se desarrolló un modelo operativo que sugiere los temas más relevantes que requieren soluciones y acciones organizadas para enfrentar la pandemia de Covid-19 y sus consecuencias. Los temas propuestos fueron abordaje transdisciplinario, tecnología en salud, costo-efectividad, equidad, justicia social, educación, promoción de la salud, acceso a la información, seguridad y bienestar, distribución de recursos, sustentabilidad. Este modelo puede ser útil para organizar acciones de salud basadas en la humanización de la atención, involucrando a la sociedad en un esfuerzo colectivo para mantener la calidad de la atención.

Palabras clave: COVID-19; Humanización del cuidado; Políticas de salud; Atención integral de salud.

1. Introduction

Infectious diseases represent a global burden and a global threat, despite all advances in vaccines, diagnostics, therapeutics, and methods for infection control. Investments in research have been addressed to combat infectious diseases, but pathogens with pandemic potential require coordinated efforts across the global health community (Head et al., 2015). Coexistence with the thousands of known pathogenic agents was a decisive factor in the evolution of our species, and we have survived. The world population explosion in the 20th century reveals how the development of the health care has contributed to increase human life's expectancy and quality (Van Bavel, 2013), as an evolutive advantage over other species. On the other hand, some pathogens are also benefited, since lower lethality is an opportunity for greater transmission, favoring the disease to become endemic, which prolongs indefinitely its effects on society.

In covid-19 pandemic, current knowledge in health technology is enabling the quickest and most globally organized response to a virus outbreak. In three months, scientists identified the pathogen and its forms of transmission, carried out its genetic mapping, developed diagnostic tests, and tested potential drugs for treatment (Rafiq et al., 2020). From this knowledge, vaccines were developed (Albrecht, 2022) and several protocols were proposed aiming at the covid-19 prevention and treatment (Ahmad and Shabbiri, 2022), as well as the healthcare workers protection.

Transmission through large droplets and airborne transmission (Ren, Cao and Hagighat, 2022) induced worldwide governments to declare quarantine and lockdown of their cities or countries. Social distancing measures have been implemented worldwide to prevent the collapse of health systems, and the elective healthcare was partially suspended. Professions such as nursing, dentistry, speech therapy, physiotherapy and occupational therapy were directly affected since they require a closest contact between professional and patient. Procedures and routines of these professions must be reviewed from now on, which can affect essential aspects to humanization of care, by imposing barriers to the interpersonal relationship, increasing the diseases burden, and hindering the continuity of care.

With the health systems overloaded, saving lives became the highest priority objective, and healthcare assumed a disease-centered model that focuses on diagnosing, preventing, and treating an individual disease, which determines the relevant clinical results and whose prevention and treatment are directed to survival (Tinetti and Fried, 2004).

As the pandemic progresses, we are witnessing a process of dehumanization of care, which may be described by the conceptual framework: objectification, passivity, homogenization, isolation, loss of meaning, loss of personal journey, dislocation, and reductionist body (Todres et al., 2009).

People were subjected to sanitary measures, whereby public health priorities overlapped individual decisions. People were exposed to a broad disclosure of epidemiological data, thus establishing a feared atmosphere aggravated by conflicting information and low comprehension of science (Sampaio et al., 2022).

On the other hand, healthcare providers have worked with limited resources, sometimes without adequate protection, forced to make decisions with little scientific evidence, overloaded, and under the pressure of protecting or saving others' lives.

This dehumanized frame is not restricted to covid-19 fighting but extends to all healthcare. In this context, this study aims to propose an operational model to assist in the planning of actions and inspire work fronts in the fight against the covid-19 pandemic, providing insights for future research and health policies.

2. Methodology

A search was carried out in PubMed Central using the terms “health care models” and “humanization of care”. Studies that presented conceptual and methodological aspects of health care models and humanization of care were selected, in addition to experience reports and systematic reviews. These studies supported the development of an operational model to guide actions aimed at humanization of health care after covid-19 pandemic.

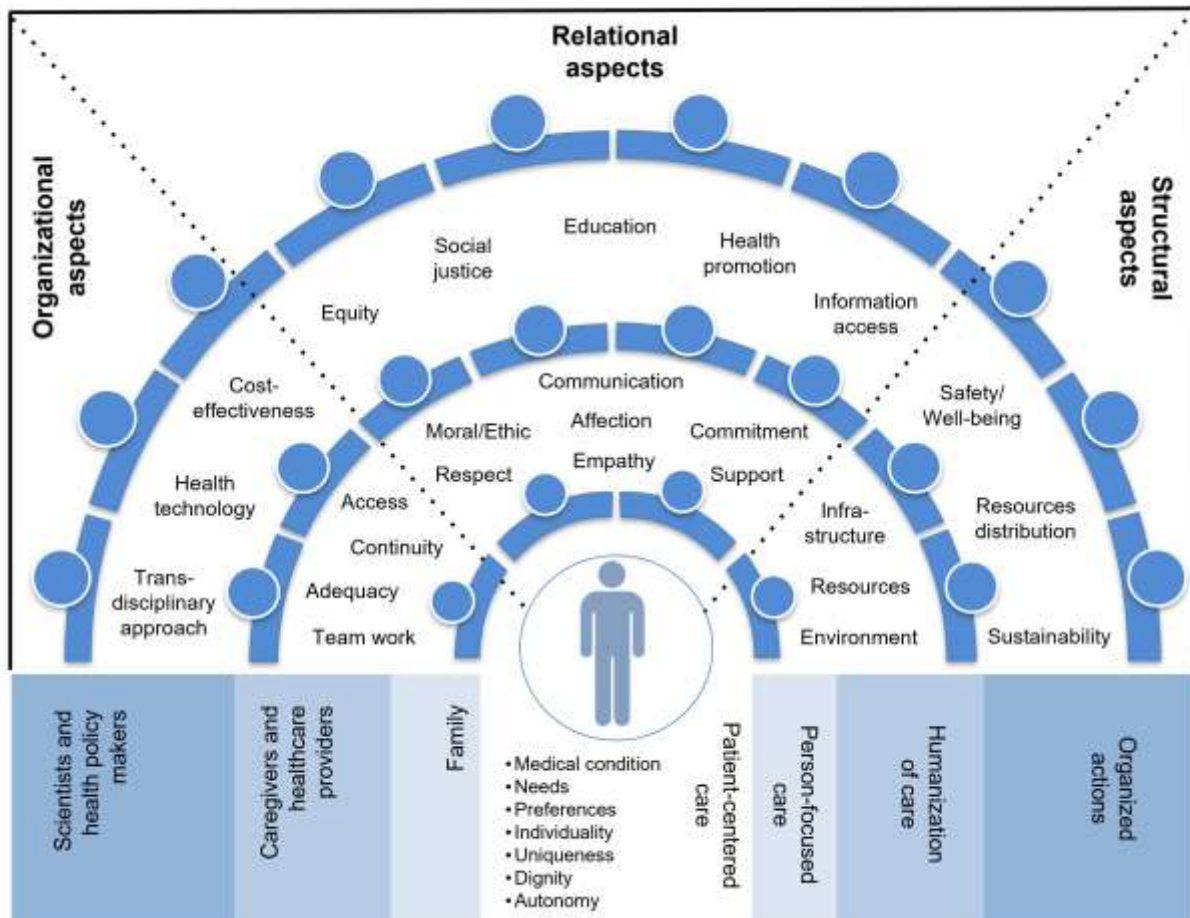
3. Results and Discussion

For the last fifty years healthcare models have been discussed and alternatives to the traditional disease-centered care have been proposed: patient-centered care, person-focused care, family-centered care and, overlapping all of these, the humanization of care (Tinetti and Fried, 2004; American Geriatrics Society Expert Panel on Person-Centered Care, 2016; Busch et al, 2019; Tripodi et al., 2019; Heras et al., 2020).

The humanization of care encompasses an empathetic and respectful approach to patients, human and material resources, and a balanced workload for healthcare providers, aiming to establish meaningful, mutually beneficial relationships with patients. Busch et al., (2019) proposed critical elements of humanization of care by synthesizing and thematically analyzing the perspectives of patients, caregivers, and healthcare providers. The key components identified were assigned into three areas: relational, organizational, and structural.

Based on the study of Busch et al. (2019), an operational model was developed (Figure 1) proposing themes that should be targets of strategic actions to face the Covid-19 pandemic and its consequences.

Figure 1. An operational model to guide actions aimed at humanization of health care after covid-19 pandemic.



Source: Authors.

This operational model was organized into different levels, corresponding to the groups of people who may be involved in the patient care, according to each health care model. In the last level, scientists and health policy makers were placed as leaders, responsible for the actions organized in favor of the quality of the health services. The critical elements of humanization of care selected between those identified by Busch et al. (2019) were, in the organizational area: access to health care; continuity in treatment; adequacy of training and work conditions; and multidisciplinary teamwork. In the relational area the elements were: respect for the patients’ dignity, uniqueness, individuality, and autonomy; empathy towards the patient; affection reflected by relationship bonding, patience, and attention towards the patient; verbal and non-verbal communication; moral and ethic principles; commitment; and support for the patient, patients’ caregivers and healthcare providers. In the structural area, the elements were human and material resources, adequate infrastructure, and pleasant environment.

These critical elements were organized according to their respective areas. Then, based on the related literature, the most relevant themes addressing each group of critical elements and requiring solutions and organized actions were identified. The themes proposed in this operational model were transdisciplinary approach, health technology, cost-effectiveness, equity, social justice, education, health promotion, information access, safety and well-being, resources distribution, sustainability. This operational model does not represent solutions, but a planning process so that actions to combat Covid-19 and other future pandemics are aligned with the health care model based on the humanization of care.

The concept of “humanization of care” has been discussed by different approaches, depending on target population (Tripodì et al., 2019, Pérez-Fuentes et al. 2019) and treatment settings (Nora and Junges, 2013; Castilho et al. 2014; Heras et

al., 2020). Some review studies have synthesized the main aspects of different healthcare models, which help to identify elements to be addressed for developing action strategies (Busch et al, 2019; Tripodi et al, 2019).

Humanized care requires recognizing a patient's individuality, uniqueness, autonomy, and personal history. Identifying medical condition and patients' needs and preferences is important, but not sufficient. Understanding pain and suffering requires empathy. Healthcare providers should build a relationship bonding based on respect, confidence, support, affection, moral and ethical principles for establishing a communication bridge (Meneses-La-Riva, Suyo-Veja and Fernández-Bedoya, 2021).

Protective and social distancing measures are barriers to the human senses – touch, sight, hearing, and smell –and may affect physical examination and communication with patients. Sometimes patients are unable to express their symptoms in words or intentional gestures. For establishing a communication bridge, healthcare providers should use the verbal and non-verbal communication as part of resources for welcoming patients, and sometimes their families, aiming to achieve humanization in healthcare. Expression of non-verbal communication is natural and intuitive; its fluency is strongly influenced by the cultural environment. And it is even more important when the patient is immature or has some cognitive difficulty (Castilho et al., 2019). An interesting example of the humanized care during the Covid-19 pandemic was the “hands of love” technique, in which latex gloves have been filled with warm water and fitted to the hands of the sick intubated patient (Toledo, 2021).

Covid-19 pandemic reinforced the importance of improving access to information for the general population. There was an exponential increase in telemedicine technology, and the whole health system has been using technologies to minimize the load on hospitals (Elavarasan and Pugazhendhi, 2020). There are broad communication channels available, and the scientific information is reaching more people in the world. Professionals of the future should not be those who deny information under the pretext of avoiding misinterpretation, but those who clarify for everyone the information available on their professional field. People who purposely produce false information, especially in the health science, should be strictly punished as they put people's health at risk. Healthcare providers would demonstrate commitment and competence by broadening communication channels for health promotion, prevention, and treatment monitoring. Information technology is also helpful for data storage and discussion with peers.

The transformative potential of e-learning (learning aided by electronic resources, often internet) enables education and training can accelerate the skills development to achieve universal health coverage and respond to emerging disease threats (WHO, 2016). E-learning may be a tool for instructing caregivers, health agents, and particularly for patients and their families to protect themselves, protect others, identify signs of illness, and express their symptoms correctly.

In education, health must be assumed as a "transversal theme", which discussion implies in to propose solutions and alternatives in different levels, from intervention in the social area, through macro-social transformations, to individual performance (Bovo, 2004). Education may be the first step towards social justice in health. The transdisciplinary work can be initiated from the formation of the health professional. An example of this approach is the transversal formations such as those proposed by the Universidade Federal de Minas Gerais, in Brazil. Undergraduate students from various areas come together to study a transversal topic from various points of view (Castilho et al., 2020).

Health services should be available for all. They must be offered with equity, ensuring more attention and investments for those who need it most, either by urgency or complexity. Someone who has suffered from injustice and has had dignity disrespected, or has lost the power of decision, is unlikely to entrust health to another person. A professional who feels devalued, with excessive responsibilities, exposed to occupational risks, is unlikely to offer a humanized care. In the Covid 19 pandemic, these professionals were exposed to illness, exhaustion, fear and stress (Karagol and Kaya, 2022; Canal-Rivero et al., 2022), even after two years of pandemic.

In interdisciplinary assistance, the importance of each profession involved must be recognized, avoiding too contrasting differences in remuneration, workload, and exposure risks. Each member of the community needs to feel benefited, not only the patients (Castilho et al., 2014).

Other infectious diseases can emerge anytime. Thus, many changes in safety protocols will be definitive. The impact of these changes in different areas of health must be discussed by a transdisciplinary approach since solutions may come from any sector of society. Adequacy of working conditions and professional training may allow the return of all health activities, including elective care, enabling secure access to prevention and treatment modalities and continuity of care. Research and investments should boost any initiative with the potential to improve the efficacy of diagnostic and treatment methods. Limitations for the involvement of the entire work team must be identified and modified.

Health technology has the potential to aid human senses, overcoming the barriers of social distance and personal protective equipment (PPEs). The textile industry could direct efforts to develop intelligent textiles for PPE confection that are safe, antimicrobial, comfortable, and visually less frightening to the patients, especially children and patients with special needs. Furthermore, the PPE's fabric should allow sterilization and reuse since management of hospital trash is already an overwhelming environmental problem, which has been certainly aggravated by the covid-19 pandemic, especially in relation to water consumption, pollution by chemical agents, carbon emission and waste production (Costa, 2021; Uddin et al., 2021).

Health technology can optimize diagnosis and treatment efficiency, improving healthcare flow, with benefits in terms of cost-effectiveness. Reduce the number of visits to hospitals and clinics would reduce the risk of contamination. Machine-learning models designed to examine the medical images and detect the disease at an early stage are promising (Kulkarni et al., 2020). In an epidemic situation, artificial intelligence can still support the hospital management systems and provide real-time data to the healthcare workers and to patient's family members (Elavarasan and Pugazhendhi, 2020).

Care structure must be planned to ensure safety, a pleasant environment, and the stakeholders' well-being. Buildings should provide natural lighting and ventilation (Ren, Cao and Hagighat, 2022), important weapons in the control of infectious diseases. With the Covi-19 pandemic and, potentially, future outbreaks, surgical centers and offices will potentially need to adopt negative pressure room settings, using high quality filters and air exchange rates of at least 12 ACH (air changes per hour) (Ferneck, 2020). Indoor air purifiers should be used as a supplementary and precautionary measure, since they have the potential to reduce the exposure of healthcare workers to virus-laden aerosols, and even at patients' homes, reducing the exposure of their households and the risk of household infection (Zhao et al., 2020).

Pandemics' economic impact can aggravate social inequalities and can make health something unattainable for poorer people. The resources distribution must be strategically planned for effective addressing global threats. The concentration of knowledge, technology, and natural resources in few countries is not reasonable and has been shown inefficient and expensive. This transformative process must be developed based on sustainability, respecting social, environmental, and economic principles. To achieve the sustainable development goal, the World Health Organization has recommended changes on health employment, health education and health service delivery to maximize future returns on investments. These changes might be enabled by adequate funding in the right skills, decent working conditions and appropriate number of health workers; intersectoral collaboration at national, regional, and international levels; international recognition of health workers' qualifications; and robust research and analysis of health labour markets (WHO, 2016).

Some alternatives and solutions for achieving the humanization of care already exist or are under development. However, they have been applied in an isolated or uncoordinated way, which demonstrates that their wide application depends on an effort by the whole society, in an organized and well-planned way, so that the results are more effective and reach people in a universal, equitable and integral way. Infectious agents ignore the human concepts of countries, borders, culture, religion, society, and economy. Thus, these challenges belong to all of us.

4. Conclusion

Healthcare planning involves a complex and transdisciplinary care network that should benefit all members of society. The health care model based on the humanization of care is the most comprehensive, benefiting patients, their families, caregivers, and healthcare providers. Therefore, actions to combat pandemics must be guided by this model, involving the whole of society in a collective effort to maintain the quality of care.

References

- Ahmad, W. & Shabiri, K. (2022). Two years of SARS-CoV-2 infection (2019–2021): structural biology, vaccination, and current global situation. *The Egyptian Journal of Internal Medicine*. 34,5 <https://doi.org/10.1186/s43162-021-00092-7>
- American Geriatrics Society Expert Panel on Person-Centered Care, Brummel-Smith, K., Butler, D., Frieder, M., Gibbs, N., Henry, M. and Saliba, D. (2016) Person-centered care: A definition and essential elements. *Journal of the American Geriatrics Society*. 64(1), 15-18. <https://doi.org/10.1111/jgs.13866>
- Bovo, M. C. (2007). Interdisciplinaridade e transversalidade como dimensões da ação pedagógica. *Revista Urutagua*.07,1-11. <http://www.urutagua.uem.br/007/07bovo.pdf>
- Busch, I. M., Moretti, F., Travaini, G., Wu, A. W., & Rimondini, M. (2019). Humanization of Care: Key Elements Identified by Patients, Caregivers, and Healthcare Providers. A Systematic Review. *Patient*.12(5), 461-474. doi:10.1007/s40271-019-00370-1.
- Canal-Rivero, M., Armesto-Luque, L., Rubio-García, A., Rodríguez-Menéndez, G., Garrido-Torres, N., Capitán, L., Luque, A., Crespo-Facorro, B., & Ruiz-Veguilla, M. (2022). Trauma and stressor-related disorders among health care workers during COVID-19 pandemic and the role of the gender: A prospective longitudinal survey. *Journal of Affective Disorders*, doi: <https://doi.org/10.1016/j.jad.2022.01.021>
- Castilho, L. S., Lage, B. F., Padovezzi, L. D., Diniz, I. M., Oliveira, A. C. B., & Resende, V. L. S. (2019). A comunicação não verbal no exercício da prática odontológica entre o profissional, o paciente com deficiências de desenvolvimento, seus pais e cuidadores. *Interfaces-Revista de Extensão da UFMG*.7(1),564-571. <https://periodicos.ufmg.br/index.php/revistainterfaces/article/view/19088>
- Castilho, L. S., Silva, M. E. S., Oliveira, A. C. B., Abreu, M. H. N. G., Ankomaa, H. K., & Resende, V. L. S. (2014). Considerações sobre a humanização do atendimento odontológico a pacientes com deficiências de desenvolvimento a partir de um projeto de extensão. *Revista Brasileira de Extensão Universitária*.5(1),19-25. doi:10.36661/2358-0399.2014v5i1.1095.
- Castilho, L. S., Vilaça, E. L., Leão, D. M., Dornelas, L. M., Santos, B. P. R., & Dias, D. R. (2020). Experience of a discipline of UFMG Dentistry in Cross-curricular Training in Accessibility and Inclusion. *Revista Docência do Ensino Superior*,10, e023856, p. 1-14. DOI:<https://doi.org/10.35699/2237-5864.2020.23856>.
- Costa, J.P. (2021). COVID-19: Implications for plastic reduction, with a focus on Personal Protective Equipment (PPE). *Journal of Hazardous Materials Advances* 4, 100022. <https://doi.org/10.1016/j.hazadv.2021.100022>
- Elavarasan, R. M., & Pugazhendhi, R. (2020). Restructured society and environment: A review on potential technological strategies to control the COVID-19 pandemic. *Sci Total Environ*.725:138858. doi:10.1016/j.scitotenv.2020.138858.
- Ferneini, E. M. (2020). The Financial Impact of COVID-19 on Our Practice. *J Oral Maxillofac Surg*.78(7),1047-1048. doi:10.1016/j.joms.2020.03.045.
- Head, M. G., Fitchett, J. R., Nageshwaran, V., Kumari, N., Hayward, A., & Atun, R. (2015). Research Investments in Global Health: A Systematic Analysis of UK Infectious Disease Research Funding and Global Health Metrics, 1997-2013. *EBioMedicine*. 3,180-190. doi:10.1016/j.ebiom.2015.12.016.
- Heras, G., Zimmerman, J., Hidalgo, J. Humanizing Critical Care. In: Hidalgo, J., Perez-Fernandez, J., & Rodríguez-Veja, G.M. (2020). *Critical Care Administration*. Springer, Cham;2020, 189-197. DOI:10.1007/978-3-030-33808-4_14.
- Karagol, A. & Kaya, Z. T. (2022). Healthcare Workers' Burn-out, Hopelessness, Fear of COVID-19 and Perceived Social Support Levels. *The European Journal of Psychiatry*, doi: <https://doi.org/10.1016/j.ejpsy.2022.01.001>
- Kulkarni, S., Seneviratnem, N., Baig, M. S., & Khan, A. H. A. (2020). Artificial Intelligence in Medicine: Where Are We Now? *Acad Radiol*.27(1),62-70. doi:10.1016/j.acra.2019.10.001.
- Meneses-la-Riva, M. E., Suyo-Veja, J. A., & Fernández-Bedoya, V. H. (2021). Humanized care from the nurse-patient perspective in a hospital setting: a systematic review of experiences disclosed in Spanish and Portuguese scientific articles. *Frontiers on Public Health*. 9,737506. DOI:10.3389/FPUBH.2021.737506
- Nora, C. R. D., & Junges, R. (2013). Humanization policy in primary health care: a systematic review. *Revista de Saúde Pública*. 47(6),1186-1200. doi:10.1590/S0034-8910.2013047004581
- Pérez-Fuentes, M. D. C., Herrera-Peco, I., Molero-Jurado, M. D. M., Oropesa-Ruiz, N. F., Ayuso-Murillo, D., & Gázquez-Linares, J. J. (2019). The development and validation of the healthcare professional humanization scale (HUMAS) for Nursing. (2019). *International Journal of Environmental Research and Public Health*. 16(20),3999. doi: 10.3390/ijerph16203999
- Rafiq, D., Batool, A., & Bazaz, M. A. (2020). Three months of COVID-19: A systematic review and meta-analysis. *Rev Med Virol*.30(4),e2113. doi:10.1002/rmv.2113.

- Ren, C., Cao, S. J., & Haghghat, F. (2022). A practical approach for preventing dispersion of infection disease in naturally ventilated room. *Journal of Building Engineering*, 48: 103921. doi: 10.1016/j.jobbe.2021.103921
- Sampaio, L. R., Constantino, M. K. R., Pires, M. F. D. N., Santos, T. L. S., Caetano, L. M., Dell'Agli, B. A. V., & Santos, I. T. (2022). Effects of Living Conditions, Political Orientation, and Empathy on Behaviors and Attitudes During the COVID-19 Pandemic: a Study in the Brazilian Context. *Trends in Psychol.*, 14, 1–23. doi: 10.1007/s43076-021-00130-x.
- Tinetti, M. E. & Fried, T. (2004). The end of the disease era. *Am J Med.* 116(3), 179-185. doi:10.1016/j.amjmed.2003.09.031.
- Todres, L., Galvin, K. T., & Holloway, I. (2009). The humanization of healthcare: A value framework for qualitative research. *Int J Qual Stud Health Well-being.* 4(2), 68-77. doi:10.1080/17482620802646204.
- Toledo, M. Para amparar intubados com Covid, enfermeiros usam 'mãozinha do amor'. *Folha de São Paulo.* 04/04/21. <https://www1.folha.uol.com.br/cotidiano/2021/04/para-amparar-intubados-com-covid-enfermeiros-usam-maozinha-do-amor.shtml>
- Tripodi, M., Siano, M. A., Mandato, C., De Anseris, A. G. E., Quitadamo, P., Nuzio, S. G., Siani, P., & Vajro, P. (2019). Humanization interventions in general pediatric wards: a systematic review. *European Journal of Pediatrics.* 178(5), 607-622. DOI: 10.1007/s00431-019-03370-3
- Van Bavel, J. (2013). The world population explosion: causes, backgrounds and -projections for the future. *Facts, views & vision in ObGyn*, 5(4), 281–291.
- World Health Organization. (2016). Working for health and growth: investing in the health workforce. Geneva: WHO. <https://www.who.int/hrh/com-heeg/reports/en/>
- Uddin, M. A., Afroj, S., Hasan, T., Carr, C., Novoselov, K. S., & Farin, N. (2021). Environmental Impacts of Personal Protective Clothing Used to Combat COVID- 19. *Adv. Sustainable Syst.* 2021, 2100176. DOI: 10.1002/adsu.202100176
- Zhao, B., Liu, Y., & Chenm C. (2020) Air purifiers: A supplementary measure to remove airborne SARS-CoV-2. *Building and Environment.* 177, 106918. <https://doi.org/10.1016/j.buildenv.2020.106918>