

COVID-19 Pandemic: Risks and Uncertainties in Contemporary Society

Márcia Regina Farias da Silva

PhD Professora, UERN, Brazil
marciaregina@uern.br

Carlos Aldemir Farias da Silva

PhD Professor, UFPA, Brazil.
carlosfarias1@gmail.com

Maria da Conceição Farias da Silva Gurgel Dutra

PhDr Professora, UFPB, Brazil.
concefarias@gmail.com

SUMMARY

In contemporary society, the advancement of the new coronavirus (SAS-CoV-2) has made clear the relationships between society's actions and their consequences, both in the spread of the disease and, in the environmental issue, in the imbalance of ecosystems. In this sense, this study seeks to present a reflection on the relationship between modern science, the environment, and the health crisis of Covid-19, having as theoretical basis the studies of Ulrich Beck on risk society in the context of globalization. As a methodological procedure, a bibliography and documentary research were carried out. The study found that the current model of society can lead humanity to catastrophes at a global level, without the possibility of calculating the risk, since environmental problems are beyond the control of society and present many uncertainties, especially in the post-pandemic.

KEYWORDS: Risk society. Globalization. Science and technology.

1 INTRODUCTION

In the present mundialization or globalization scenario, no matter how it is demonized, the advance of the Biotechnological Revolution has been observed for its echoes in the world production of medicines, clothing, and even food. In a planet in constant transformation, whose natural environment has been replaced by an even more artificial one, the globalization phenomenon takes place together with biotechnological advances. Thus globalization, at the same time that it promotes the minimization of differences, it demands the incorporation, homogenization, standardization and uniformity of some characteristics, those more aligned with market needs, in order to facilitate and massify consumption.

In this context, Ulrich Beck presents an important insight from the “risk society” concept, showing that we live in a world surrounded by uncertainties. The technological innovations have caused the increase of global risk. In this direction, we face a scenario that Beck names “sea of ignorance”, once we are neither able to envisage what risks would be caused by the model of society in which we live in, nor have the notion of the range of such risks (BECK, 2010).

According to Barbieri (2020), in modern sociology, in particular in Ulrich Beck’s work, pandemics have been identified as one of the main risks of modernization. The present Covid-19 sanitary crisis not only attests this fact but makes it easy to identify how modernization is both the cause and the consequence of the pandemic. It is difficult to foresee how changes will impact social processes in the post-pandemic period.

Coronavirus SAS-CoV-2 causes Covid-19, which is a zoonotic disease transmitted from animals to humans. Zoonoses significantly threaten our health. When symptoms are severe, the lack of antibodies, which could have been produced by previous exposition, prevents our body to defend itself. Some examples of recent outbreaks include the Severe Acute Respiratory Syndrome or SARS (in 2002); the Avian Influenza or Avian Flu (in 2004); H1N1 or the Swine Flu (in 2009); the Middle East Respiratory Syndrome or MERS (in 2012); Ebola (in 2014–2015); the Zika Virus (in 2015-2016), and the West Nile Fever (in 2019) (SILVA, SILVA and DUTRA, 2020).

The emergence of zoonoses, such as Covid-19, is related to changes in our lifestyle, which have drastically affected the planet Earth. We, human beings, have destroyed forests and other natural ecosystems in order to expand urban areas, settlements, agriculture and industry. As more space is created, the space for wildlife is reduced and the barriers for natural protection of humans and animals are degraded, increasing the risk of emergence of new diseases.

In this direction, this study presents an insight on modern science, the environment, and the COVID-19 sanitary crisis, having as theoretical basis Ulrich Beck's risk society and the context of globalization.

2 METHODOLOGY

This research adopts the qualitative approach. As methodological procedure for the preparation of this study, we try to establish a theoretical discussion on modern science, risk society, globalization, and the Covid-19 sanitary crisis, leading to a reflexive analysis involving the contemporary model of society, way of life, environmental changes, and the emergence of zoonoses.

A comprehensive bibliographical research was carried out, including books, scientific articles, dissertations and theses identified by search engines and the sectorial library of the Central Campus of the Rio Grande do Norte State University (UERN). Bibliographical research can be understood as “[...] the one that is developed trying to explain a problem from theories published in a variety of sources: books, articles, manuals, encyclopedias, proceedings, electronic media, etc.” (HEERDT; LEONEL, 2007, p. 67).

The research made use of via keywords and data bases, such as Google Scholar, the Portal of the Coordination for the Improvement of Higher Education Personnel – CAPES, the Brazilian Digital Library for Theses and Dissertations – BDTD, the Scientific Electronic Library Online – *SciELO* – Brazil, and sites of organizations related to the United Nations. The main keywords used to locate publications that could contribute to the concretization of the objectives of this study were: (i) coronavirus; (ii) risk society; (iii) globalization, and (iv) environmental changes.

In order to widen the investigation sources, a documentary research was also performed taking as basis the Brazilian Ministry for Health (MS) and the World Health Organization (WHO). According to Gil (2008), the documentary research can be understood as the one that uses materials that have not been analytically treated, or, if they already were, can be distinctly treated in order to reach the objective intended by the research.

As observed by Silva, Mascarenhas, Dutra (2020), the literature specialized in Covid-19 presents a panorama of the pandemic under a variety of viewpoints: social, political, economic, environmental, food security, among others. A multidisciplinary view of the conjuncture of the current health crisis is presented, taking into account the gaps in perceptions for a new panorama that is still underway, in other words, a still undefined design for a post-pandemic scenario.

3 RESULTS AND DISCUSSION

The post-pandemic uncertainties are so many and make us think on multiple fronts: from the economy point of view: the market's behavior, the support of large-, medium- and small-sized enterprises, the offer of jobs, a new remote work model that may demand more time and dedication from the employees; from the social point of view: social distancing, intensification of the use of social networks, the anguish to think of how the “new normality”

will be, the return to school activities and to work; and, under the environmental perspective: how the new relationships between the current economic model and the environment will be designed in compliance with Agenda 2030 and its global guidelines, in order to think about and implement the seventeen Sustainable Development Objectives, established in 2015 by the United Nations (UN).

These uncertainties do not only permeate the above-mentioned spheres, but also haunt humanity at different scales and aspects. Thousands of people in the whole planet are concerned with the possible Covid-19 consequences and sequels – all is uncertain: from the definitions of cures for the disease to the developments of possible sequels that people affected by the disease may have to face.

Moreover, there is the risk of new outbreaks in countries that supposedly have controlled the pandemic within their borders, or even the anxious wait of the entire world population for vaccines or remedies that can refrain Covid-19.

However, if it is clear to us that nothing will be the same as before, we can at least declare that the pandemic has disorganized our little certainties and disrupted social behavior. Its consequences lead us to think about our selfishness and signal that ‘to avoid the hazard of a premature death of the humanity and to make Homeland Earth’ everybody’s home, our sanctuary salvation, is essential, because everything that happens on the planet affects the lives of the 7.7 billion humans who inhabit it (SILVA, SILVA, DUTRA, 2020, p. 12).

It is certain that a major belief of the modern society has been the idea that science and technology would solve the externalities of the adopted predatory production process, especially from the Industrial Revolution on, which triggered the accelerated consumption of natural resources and consequently the production of waste and environmental problems, as we observe nowadays.

In this direction, Morin (2020a) points to the necessity of deconstructing the belief in absolute truths in science, the obstinacy for guarantees and certainties, and the research without controversies. The moment in which we live in tends to convince citizens and researchers that scientific theories are biodegradable and that “science is a human reality that, as democracy, is based on debates of ideas, despite its checking methods are stricter” (MORIN, 2020a, *on line*).

If on one hand science and technology have contributed and still contribute to the economic advancement, on the other hand they are also responsible for many environmental hazards. Beck (2010) considers that our way of life can lead to global catastrophes, with no possibility of risk calculation, it escapes from our control, and is between safety and destruction. In this scenario, the past does not offer solidity to determine how the present may be.

The author highlights that we have become “active today to avoid and mitigate problems or crisis of tomorrow or the day after tomorrow, to take precautions in respect to them” (BECK, 2010, p. 40). They are the threats projected from the future that are not taken into consideration as they should be. Because in many situations the risks are not visible in the short term, which makes us presuppose that they are inexistent, which is a farse.

To Morin (2020a), science is a human reality that “in spite of that, the main accepted theories tend to become dogmatized, and the great innovators have always fought for their discoveries to be recognized” (MORIN, 2020a, *on line*).

In this sense, Santos (2006, p. 159) states that “the idea of science, the idea of technology and the idea of global market must be faced together, thus offering a new interpretation to the ecologic issue, once the changes that occur in nature are also subordinated to this logic.” In the technical-scientific-informational period, as the author conceives post-modernity, with the extraordinary progress of science and technology, the ecologic issues must be also analyzed under the prism of global market, because the transformations that affect nature find deep connections with the new global conjuncture. This moment is also named “informational” because information plays a prominent role, it is the propulsion vector of this social, cultural, and territorial transformation process (SANTOS, 2006).

It is interesting to note that even the geographic medium is constrained by information, because it takes the technical-scientific content to a variety of localities, generating development centers (SANTOS, 2008). It is thus clear that the interaction of science, technology and information makes the artificial space even more predominant: universal and standardized, in face of the domination and modification of the natural environment. This space is even present in rural areas (SANTOS, 2006), either by means of the use of pesticides, fertilizers, or even genetically modified foods.

This period allows humans not only to use what is found in nature but make use of their intelligence to create products in the laboratory. Therefore, in an ever-changing planet, in which the natural environment has been replaced by an even more artificial environment, the globalization phenomenon gains space together with biotechnological advancements, which are even reflected in the feeding act.

What is certain is that science is not always able to predict risks. For Morin (2020a), science lives and progresses by means of controversies. Debates involving chloroquine, for example, as a possible medication to combat Covid-19, have raised the question of the alternative between urgency and caution. This debate shows that:

These scientists defended points of view very different, sometimes contradictory, from one another, regarding measures to be adopted, possible new remedies to respond to the disease, expiry date of this or that medication, duration of clinical trials to be carried out. All these controversies lead to doubts in the citizens' minds (MORIN, 2020a, *on line*).

In this direction, as science cannot answer all questions, it is not known for sure the origin of the new coronavirus. It is probable that the environmental degradation that has intensified along the 20th Century could have caused the emergence and mutations of SAS-Cov-2. The agricultural production model focused on agribusiness, as well as food industrialization, may have triggered significant changes in eating habits around the world, leading to the evolution and adaptation of microorganisms.

China, the country that recorded the first case of the disease, is the target of constant attacks regarding the genesis of the virus, fake news that suggest its purposely development and that products imported from China possibly transmit the new

coronavirus. The cultural eating habits of the Chinese people have also been criticized (SILVA, SILVA, DUTRA, 2020, p. 13).

On this issue, it is known that: “many hypotheses are raised concerning the new coronavirus and its origin. It is known to all that the first manifestations of infected people started in Wuhan in China and spread throughout the world” (BENEVIDES, 2020, p. 145).

It is worth mentioning that there are peculiarities in China that must be considered and there is an important one to be highlighted, that is, the local commerce in that country, because their business model is totally different from that we are used to. In China, domestic and wild animals and sea food are sold in fairs and markets (BENEVIDES, 2020). This practice is ideal for the possibility of propagation of viruses that are hosted in certain animals.

Benevides (2020) highlights that, according to a study by the evolutionary epidemiologist Rob Wallace reported on *Rede Brasil Atual*, it is possible that the new coronavirus, unleashed by environmental degradation, would be present in bats. The bats, by attacking hogs bred in factory farms for their own subsistence, would have inoculated the already genetically modified virus, allowing the virus transmission to humans.

Food culture is an instrument for the formation of a national identity. According to Lévi-Strauss (2004), nourishment is the encounter of culture and nature, as it establishes an identity between humans and food. Besides being a vital necessity, nourishment is a process that involves forms, cultivation technologies, choices (usually guided by economic factors), preparation and presentation.

The act of feeding involves social and cultural aspects and is replenished of representations and symbolisms present in the establishment of relationships between humans themselves and the environment. However, the consumption of wild animals promoted by the Chinese agribusiness model that has led more socially vulnerable populations to adopt the consumption of wild animal proteins can be the key to the understanding of the new coronavirus (BENEVIDES, 2020).

For Barbieri (2020), modernization can be represented as cause of virus transmission by two transformations experienced by humanity in the 20th century: (i) environmental degradation, and (ii) development of means of transport, specially by air. Thus, environmental degradation, considering in particular the reduction of forested areas, urban expansion, the presence of humans in wild life areas, has promoted “the so-called *spillover*, i.e., the virus has not been hosted only by bats, but has migrated to other host species” (BARBIERE, 2002, on line).

In the context of the 20th century biotechnological revolutions, the debate, among other issues, regarding the agricultural production model and the production of genetically modified food is raised by the society. Biotechnology represents a new knowledge frontier – thus, to comply with a global demand for food that meet market expectations (large-scale, standardized production, so as to save time and generate profits), the most modern technologies must be applied to planting, cultivation and food production.

Thus, artificial, transgenic food represents the association of science, technology and information, at the service of the market and satisfaction of a global necessity for standardization and consumption. In other words, this mass production, aiming at saving money and time, perfectly meets the consumerist need of our era. Indeed, we live in a society

supported by the globalized capitalist mode of production and what we are able to consume defines what we are. Therefore, citizenship is expressed by means of consumption relationships (AVELINO, 2019).

At present, the consumer is produced even before the product is produced (SANTOS, 2001), once the necessities are fabricated and consequently the more the needs, the greater the demand, trade, and profit. Thus, the genetically modified products, for example, are created in a scenario of scientific modifications and biotechnological revolutions within a capitalist society in which the irrational consumption is stimulated and globalization is established by means of the enforcement of the global market and information.

From the standardization of a global model for society, it is possible to understand Beck's theory (2010), when he mentions that the risks are global and intimately connected with technical, administrative, and political decisions. "The risks presuppose the decisions. These are taken based on fixed norms of calculability. Such norms have been invalidated by the world risk society and the most controversial technologies have not been secured, at the expense of possible environmental disasters and biological risks, such as the standardization of the agricultural production".

To Beck (2010), new knowledge can transform, overnight, normality in danger; science progress refutes its own initial assertions about security; all danger (genetic, biological, chemical, ecologic, etc.) is produced by political and corporative decisions, indicating the failure of the social systems.

In this direction, Beck (2010) highlights that the old idea of control, security and certainty, so fundamental to the first modernity, collapses. A new type of capitalism, society, economy and personal life emerges, creating the necessity of a new reference scenario and the ideas of risk and uncertainty can be deepened from scientific discoveries and introduction of new technologies in contemporary society.

There are no possibilities of controlling chemical, genetic, ecologic, or biological risks and the new coronavirus has come to prove it. Thus, "the modifications in the environment can be considered direct consequences of modernization and an important factor for the emergence of epidemics, such as dengue, malaria, zika, etc." (BARBIERE, 2020, *on line*).

Studies pointing to the risk of global pandemics and severe diseases, such as Ebola, Influenza, and the Severe Acute Respiratory Syndrome (SARS), were presented in September 2019 at the United Nations General Assembly. The Report *A World At Risk* was the first annual document prepared by the independent agency *Global Preparedness Monitoring Board* – GPMB. The agency was launched in May 2018 by the World Bank and the World Health Organization (WHO) – it is formed by 15 members, including political leaders, agency heads, and specialists of many countries (AGÊNCIA BRASIL, 2020).

According to the GPMB Report, issues such as prolonged conflicts, fragile states and forced migrations favor rapid circulation of lethal viruses around the world, as well as climatic changes, growing urbanization, lack of treated water and basic sanitation (AGÊNCIA BRASIL, 2020).

The GPMB Report already warned in 2019 that a pandemic of proportions comparable to Covid-19 could destroy 5% of the global economy, besides leading to the collapse of many national health systems and reaching poorer communities. According to the survey carried out

from 2011 to 2018, WHO followed 1483 epidemic events in 172 countries, including Ebola, Zika, SARS, and yellow fever. In Brazil, yellow fever, malaria, and Zika epidemics were detected in that period. The WHO general director Tedros Adhanom Ghebreyesus stated that “the most severe outbreaks, such as Ebola, cholera and measles, generally occur in areas where health systems are inefficient” (AGÊNCIA BRASIL, 2020, *on line*). However, with the Covid-19 pandemic, impacts on health systems were detected in all countries of the world, especially those where health systems are private, such as the United States.

In the last decades, the world has experienced massive globalization, with consequences in the economy, politics, society, and culture (SANTOS, 2002). It is therefore a multifaceted event with interconnected territorial and legal dimensions, which has been more clearly perceived with the present sanitary crisis. In the economic field, in the ambit of the present globalization, there is the financial capitalism, marked by the command of stock exchanges, major corporations, relationships involving wage labor, consumerism, division of labor, division of classes, and social inequality. In the present stage of financial capitalism, our way of life leads us to accept and be condescend with market values. The globalized society promotes the advancement of these stigmas beyond the economic sphere, to the most varies spheres of modern life (AVELINO, 2019).

Therefore, we live in an economic system supported by consumerism, in a reality in which necessities are fabricated and overestimated, generating a disproportional consumption and leading to an unequal distribution, insufficiency, and environmental degradation. Thus, together with the modifications that have occurred in society, the human being has also been modified. The idea of right and wrong, progress and failure has achieved countless formats in the western societies, culminating with a present-day civilization concept intimately connected to an urban-industrial, middle-class, and capitalist social structure (AVELINO, 2019).

To Giddens (2002), contemporaneity is related to the most intimate and profound aspects of personal life. The transformations introduced by modern institutions, such as capitalism and globalizing influences, are reflected in individual characteristics, for example, identity, self-realization, and life style, the way of dressing, eating, and behaving.

In globalization, besides the apparent shortening of distances, the biotechnological advancements are highlighted, which has promoted the debate of countless new issues experienced by society, as a function of the interaction between science and technology and information at the service of the market (AVELINO, 2019).

In this globalized society, life is fluid and the economic (labor), social and environmental relationships know no boundaries, life is permeated by an intense transit of money, services, commodities, and people around the world.

To Giddens (1991, p. 64), globalization encompasses “the intensification of global social relationships that interconnect distant localities in such a way that local events are shaped by events that are taking place many miles away, and vice-versa”. To Giddens, globalization is a consequence of modernity, in which social relationships are more active worldwide, generating the shortening of distances.

On such transit, Barbiere (2020) highlights that:

Modernization of the transport system has made the transit of people between different territories intense. The great volume of flights, more than 250 thousand a day in the pre-Covid-19 period, and cheap air tickets were undoubtedly fundamental for the fast Covid-19 dissemination throughout practically all countries in the world. In other times, when means of transport were neither so fast nor accessible, epidemics were constrained to certain territories, as was the case of the bubonic plague, which developed along the Silk Road. When analyzing the air routes and the propagation of the virus among many localities, we realize that the greater the number of flights, the greater the number of cases in areas served by such flights. People move from a country to another, opening the door for virus propagation. Africa and South America, regions of smaller volumes of air traffic, have to this day presented a smaller number of cases. Obviously, in a second phase, contagion is triggered by the mobility of individuals within their own country, and to draw a parallel with air transport will no longer be possible (BARBIERE, 2020, *on line*).

Quoting Morin (2020b, *on line*), the virus has come to add a “new planetary crisis to the already existing planetary humanitarian crisis in the mundialization era. Everywhere, however, we continue to treat and problematize this complexity in separate sectors”. It is possible to observe that each State closes its nation in itself, and that UN “does not propose any planetary alliance of all States. As supplement victims, should we pay for sleepwalking and lack of minds that insist on separating what is connected? (MORIN, 2020b, *on line*)”.

To Morin (2020c), we live in a great planetary market that was unable to encourage a fraternal feeling among the countries. In fact, it created a generalized fear of the future. And the Covid-19 pandemic sheds light on this contradiction, making it more evident. It makes us think about the great economic crisis of the 1930's, during which several European countries, especially Germany and Italy embraced the ultranationalism. And even if the Nazis' hegemonic ideals are lacking, it seems indisputable that they are closed in on in themselves today.

The previously globalized world seems to be cloistered within a nation whose frontiers are closed to restrain the global sanitary crisis. In this context, Santos (2002) observes a phenomenon known as globalized localism, according to which a certain local event is successfully globalized. It is interesting to note that even the term “culture” transmits an idea of local; thus, when refereeing to “globalized localism”, this concept brings with it a value of global culture.

To Morin:

“The world technical-economic unification, which led to the aggressive capitalism of the 1990's, generated an enormous paradox that the emergence of the coronavirus has made visible to all: the interdependence among countries, instead of favoring the real progress of awareness and understanding among the peoples, it has triggered forms of selfishness and ultranationalism. The virus unmasked this absence of a true planetary humanitarian conscience” (MORIN, 2020c, *on line*).

In this scenario, according to Beck (2010), a rupture inside modernity is clear, because of the profound transformation in the collectivity, which gives rise to a risk society. Risk is the potential danger that is universal in the contemporary society and represents market opportunities guided by science, media and information. Beck presents us the “organized irresponsibility” concept, according to which corporations, science, and the State are together to condone risks whose effects are unknown to them. The focus is on production and for this reason society is unaware of what takes place in the research laboratories of the major

corporations. However, the environmental risk is “democratic,” reaching different social spheres, as observed in the case of the coronavirus.

The whole population is vulnerable, despite the poorest will suffer the most. It is worth mentioning that future environmental problems represent severe risks to the world’s population. The new coronavirus has emerged in a world of uncertainties fabricated by means of technological innovations. The celebrated domain and development of molecular biology and genetic engineering, at the same time that they represent scientific advancement, they raise fear-triggering questions, especially regarding the intention by which human beings can make use of this powerful technology.

Living creatures inhabit ecosystems in which balance is fundamental. Thus, the introduction of a new being, despite natural but not belonging to a given ecosystem, is capable of decompensating such balance. What would then be the effects of an “artificial” organism, other than its permanent disruption?

“It is a fact that the gap between science and society along history leads to a difficult acceptance of new discoveries, because the fear of the new is a characteristic inherent to humans” (AVIDOS, 2002, p. 6).

To Morin:

Amazingly enough, the virus reveals what was hidden in the compartmented minds formed in our educational systems, minds that dominate the technocratic, economic, financial elites: the complexity of our human world that expresses itself in the interdependence and inter-solidarity of aspects concerning health, economy, society, all that is human and planetary. This interdependence is manifested via countless interactions and feedbacks among varied components of the society and individuals. The economic problems resulting from the epidemic can eventually contribute to the propagation of this complexity (MORIN, 2020b, *on line*).

Therefore, within this global conjuncture that contraposes discourses concerning biotechnological advances: the hegemonic discourse, agribusiness expansion, and economic development and the counter-hegemonic discourse, of preservation of sustainable development techniques, a global movement in search and rescue of practices that preserve biodiversity, the respect to the environment, and the human being’s dignity. Maybe this can be the route to envisage the sustainability of all life forms on planet Earth.

4 FINAL CONSIDERATIONS

Risk society not only affects markets and organizations at the macro- and meso-social levels, but also social relationships, values, humors, fears, making the primitive emerge in us, what hundreds of years ago made us look with fear, avoid, and harass the outsider that reached our “settlement”.

The Covid-19 sanitary crisis is a reminder that the health of humans and the health of the environment are intimately connected. Circa eight million species exist on the planet, of which humans represent only a fraction. There are circa 1.7 million viruses on Earth present in mammals and aquatic birds that can infect people. Thus, if we do not take care now, we will easily be submitted to new pandemics in the near future.

In the second decade of the 20th century, the world's population is experiencing one of the most difficult and worrying moments of recent history. The Covid-19 pandemic has spread throughout the planet in an extremely fast and devastating way, infecting more than 119 million people and causing more than 2.5 million deaths. In Brazil, until the completion of this study, more than 11 million infected people and circa 277 thousand casualties were reported by WHO (2021). According to the Ministry for Health (2021), the disease is present in 100% of the Brazilian municipalities. However, more than a half of the cities (4,077) has recorded between 2 and 100 cases. Out of 1,856 municipalities, 974 confirmed only one casualty according to registered data until registered until March 11, 2021.

In this direction, the social, political, environmental, economic, and cultural impacts are enormous, possibly taking months or years to acquire a certain stability in all sectors. In face of these uncertainties, science searches for answers to control the sanitary crisis, either by means of vaccines or medications that can minimize the spreading of the disease. However, it is necessary to take into account the socioenvironmental and economic conditions that led to the emergence of the pandemic. The best way to protect ourselves from zoonoses is to prevent nature from being destroyed, because in healthy ecosystems characterized by a high biodiversity of species, there is resilience, adaptability and regulation of diseases.

It is important to consider that the present model of society is a vast laboratory of risks we do not know anything about, and only preservation and conservation of natural resources will help us manage these risks. The genetic diversity, for example, generates resistance to diseases and reduces the probability of major outbreaks. On the other hand, intensive livestock breeding causes genetic similarities, reducing resilience, and making the livestock more susceptible to the dissemination of pathogens. Consequently, humans will also be exposed to greater risks.

The high demand for meat and dairy products has caused the fast expansion of uniformly cultivated areas and intensive livestock breeding in rural and urban areas. In this sense, the herds are the link between wild life and infections, as the pathogens can be transmitted from wild animals to herds and from herds to humans. With the increase of intensive agriculture and the excessive application of antimicrobial medications to animals and people, the pathogens have become more resistant to substances that once were effective in the treatment of certain zoonoses. They constantly mutate to survive, taking advantage of different animal species, humans, and the environment.

The Covid-19 pandemic opens the debate of a global concern with informal food markets, in which wild animals are kept and sold alive, quite often in unsanitary conditions and no asepsis. When sanitary and safety practices are not taken in consideration, the spreading of viruses and pathogens among animals is facilitated, even reaching humans that deal, transport, sell, buy or eat them.

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