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EPIDEMICS OF THE LAST MILLENNIUM DEPICTED IN ART: A NARRATIVE REVIEW

EPIDEMIAS DO ÚLTIMO MILÊNIO RETRATADAS NA ARTE: UMA REVISÃO NARRATIVA

EPIDEMIAS DEL ÚLTIMO MILENIO REPRESENTADAS EN EL ARTE: UNA REVISIÓN NARRATIVA

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ABSTRACT
Art offers a unique approach to explore complexities of human experience, allowing analysis of medical issues not only from a scientific point of view, but also from an emotional, cultural, and ethical perspective. Detailed observation of paintings can help in the semiological consolidation of illnesses, complementing the care model in medicine. This article aimed to explore the relationship between art and epidemics over the last millennium focusing on the Black Death or bubonic plague and COVID-19. The former was one of the greatest epidemics in history and brought profound health impacts to society during the 14th century, as did the recent outbreak of the latter. The literature selection was based on descriptors and search filters applied to public domain electronic databases with scientific support. Following inclusion and exclusion criteria and filters elected for this study, 20 publications available in electronic databases were selected. Also, two paintings compatible with these publications were chosen. Thus, in this narrative review we sought to reflect on the importance of art in medicine and how the observation of paintings can help medical teaching. Furthermore, we highlighted the relevance of considering cultural and biological aspects, as well as semiological analyses of different views on epidemics throughout history. We expect that this article contributes to the discussion of the relationship between art and medicine and how art can be used to improve medical teaching and the understanding of epidemics.

KEYWORDS: Art. Epidemics. Bubonic plague. COVID-19.

RESUMO
A arte oferece abordagem única para explorar as complexidades da experiência humana, permitindo a análise de questões médicas não apenas do ponto de vista científico, mas também nas perspectivas emocional, cultural e ética. A observação detalhada de pinturas pode auxiliar na consolidação semiológica de enfermidades, complementando o modelo de cuidado na medicina. Este artigo teve como objetivo explorar a relação entre arte e epidemias ao longo do último milênio, com foco em peste negra ou peste bubônica e COVID-19. A primeira foi uma das maiores epidemias da história e trouxe profundos impactos sanitários à sociedade durante o século XIV, assim como o recente surto da segunda. A seleção da literatura baseou-se em descritores e filtros de busca aplicados em bases de dados eletrônicas de domínio público com respaldo científico. Seguindo critérios de inclusão e exclusão e filtros eleitos para este estudo, foram selecionadas 20 publicações disponíveis em bases de dados eletrônicas. Além disso, foram escolhidas duas pinturas compatíveis com essas publicações. Assim, nesta revisão narrativa buscou-se refletir sobre a importância da arte na medicina e como a observação de pinturas pode ajudar no ensino médico. Adicionalmente, destacou-se a relevância de considerar os aspectos culturais e biológicos, bem como as análises semiológicas das diversas visões acerca das epidemias ao longo da história. Espera-se que este artigo contribua para a discussão da relação entre arte e

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medicina e como a arte pode ser utilizada para aprimorar o ensino médico e a compreensão das epidemias.

PALAVRAS-CHAVE: Arte. Epidemias. Peste bubônica. COVID-19.

RESUMEN
El arte ofrece un enfoque único para explorar las complejidades de la experiencia humana, permitiendo el análisis de cuestiones médicas no sólo desde un punto de vista científico, sino también desde las perspectivas emocional, cultural y ética. La observación detallada de pinturas puede ayudar en la consolidación semiológica de enfermedades, complementando el modelo de atención en medicina. Este artículo tuvo como objetivo explorar la relación entre el arte y las epidemias durante el último milenio, centrándose en la peste negra o peste bubónica y el COVID-19. La primera fue una de las mayores epidemias de la historia y tuvo profundos impactos en la salud de la sociedad durante el siglo XIV, al igual que el reciente brote de la última. La selección de literatura se basó en descriptores y filtros de búsqueda aplicados a bases de datos electrónicas de dominio público con respaldo científico. Siguiendo los criterios de inclusión y exclusión y filtros elegidos para este estudio, se seleccionaron 20 publicaciones disponibles en bases de datos electrónicas. Además, se eligieron dos pinturas compatibles con estas publicaciones. Así, en esta revisión narrativa buscamos reflexionar sobre la importancia del arte en la medicina y cómo la observación de pinturas puede ayudar en la enseñanza médica. Adicionalmente, destacamos la relevancia de considerar aspectos culturales y biológicos, así como análisis semiológicos de las diferentes visiones sobre las epidemias a lo largo de la historia. Esperamos que este artículo contribuya a la discusión sobre la relación entre el arte y la medicina y cómo se puede utilizar el arte para mejorar la enseñanza médica y la comprensión de las epidemias.

PALABRAS CLAVE: Arte. Epidemias. Peste bubónica. COVID-19.

INTRODUCTION

Art and medicine

It is certainly complex to choose one definition for art in as much as conceptual variations have been attributed to it according to time and space.[1] However, as common sense indicates, it can be considered a universal manifestation present throughout human history, constantly transformed and influenced by the events and thoughts of each period. [2,3,4]

Thus, since the beginning of medicine, medical discoveries have often been recorded through artistic expressions that have spread over the years.[5,6,7] In this perspective, art can serve as a proposed educational instrument, as it increases individual exposure to different forms of worldly experiences and, through them, enhances human development.[3] Within medical education, detailed observation of paintings, followed by discussion and reflection, can facilitate the semiological consolidation of illnesses, becoming an important tool to improve observation skills.[8]

Furthermore, notable advances in new diagnostic approaches in medicine, which have contributed to a deeper understanding of the anatomical and functional characteristics of diseases,

lead health professionals to neglect the biographical nuances of patients. Given this, the healing model must be complemented by the care model, and t his paradigm shift requires a review of the curricula of medical courses, including humanity and sensitivity contents to the biopsychosocial dimensions of patients. The current view, which emphasizes patients only as carriers of illnesses, must be reformulated to consider them complete biographical beings.[7]

Therefore, it is possible to use art as a teaching strategy to transmit content in medical schools, further contributing to the integral and humanistic training of students. It is a fact that the humanities have been increasingly incorporated into medical school curricula in order to promote clinical skills and professional training. Additionally, it is evident that structured visual arts curricula can facilitate the development of empathy and clinical observation skills.[6]

Epidemics in art

An epidemic is defined as the spread of a new disease in many individuals, with no adequate immunization to contain it in a specific region. Intermittent outbreaks of infectious diseases have had profound and lasting effects on societies throughout history. Consequently, these events have powerfully shaped the economic, political, and social aspects of human civilization, given that their effects have often lasted for centuries. Epidemic outbreaks defined some of the basic principles of modern medicine, leading the scientific community to develop principles of epidemiology, prevention, immunization, and antimicrobial treatments.[9]

Some of the most notable infectious disease outbreaks that have occurred in human history are recorded in paintings that refer to plagues. [9,10] These pieces of art accurately portray semiological foundations for understanding the scope, as well as the sanitary and medical impact that some epidemics have produced in civilization, including the Black Death and COVID-19.

The Black Death was one of the most striking epidemics in history and had profound impacts on world society during the 14th century. In addition to its socioeconomic consequences, the disease had significant repercussions around medicine and health at the time.[11] With limited knowledge about infectious diseases and ineffective treatments at the time, medical challenges were aggravated by the lack of understanding of the nature of the plague. Health professionals faced difficulties in dealing with the disease, while rudimentary public health measures began to emerge in response to the devastation. The relationship between faith and medicine was also impacted, as the search for religious explanations confronted widespread suffering. In this scenario, the Black Death not only exposed the limitations of medical resources at that time, but also stimulated questions about traditional approaches, contributing to the initial development of scientific public health practices. [12,13,14]

Similarly, the recent COVID-19 pandemic has brought deep global consequences, challenging international public health. Caused by the SARS-CoV-2 virus, this disease has parallels with the Black Death inasmuch as it imposed the need to develop novel healthcare practices.[15] Registered through contemporary artistic expressions, it reflects a confrontation between the clinical aspects of the disease, characterized by high transmissibility and fatal respiratory failure, and the health advances of the 21st century, such as the global use of unprecedented personal protective equipment as well as digital and technology-based products and services.[16,17]

Epidemics have been described in different ways throughout history. The analysis of artistic collection is one of the ways of noting the evolution of epidemic combat over the years, in addition to serving as a tool for observation and medical education in the biological and humanistic aspects. Therefore, this article aimed to analyze two selected paintings, which depict two epidemics that occurred in the last millennium, the Black Death and COVID-19, and relate their semiological and cultural aspects to publications on these diseases to demonstrate the importance of art in the medical learning process.

METHOD

The method used in this study is the narrative review, which allows the description of artistic and semiological issues portrayed in works of art and their appropriate interpretations. To select the publications in electronic databases (such as PubMed, Scielo) for the theoretical framework of the analysis of the two epidemics of the last millennium elected and their relationship with art, we chose search descriptors recovered from the Medical Subject Headings (MeSH) and Boolean operator as follows: “art” “OR” “epidemic”, “art” OR “bubonic plague”; “COVID” OR “art”; “COVID” OR “painting”; “art” OR “medicine”; “art” OR “medicine” OR “students”. The search filters applied were “free full text” and “12 years”. The inclusion criteria were: 1. publications that describe biological and semiological aspects of the Black Death and COVID-19 epidemics; 2. publications that describe biopsychosocial aspects of these epidemics. The exclusion criteria were: 1. duplicate publications; 2. publications older than 12 years; 3. publications not directly related to the elected epidemics; 4. grey literature (information produced outside of traditional publishing and distribution channels – include reports, policy literature, working papers, speeches, white papers, urban plans).

To be selected, the two paintings had to make direct reference to the Black Death or COVID-19 epidemics and bring semiological references that could be used for the clinical description of the diseases. Furthermore, they should respect the pre-determined historical outline. Thus, the two paintings, illustrating the Black Death and COVID-19 epidemics, were chosen from digital collections available online in the public domain.

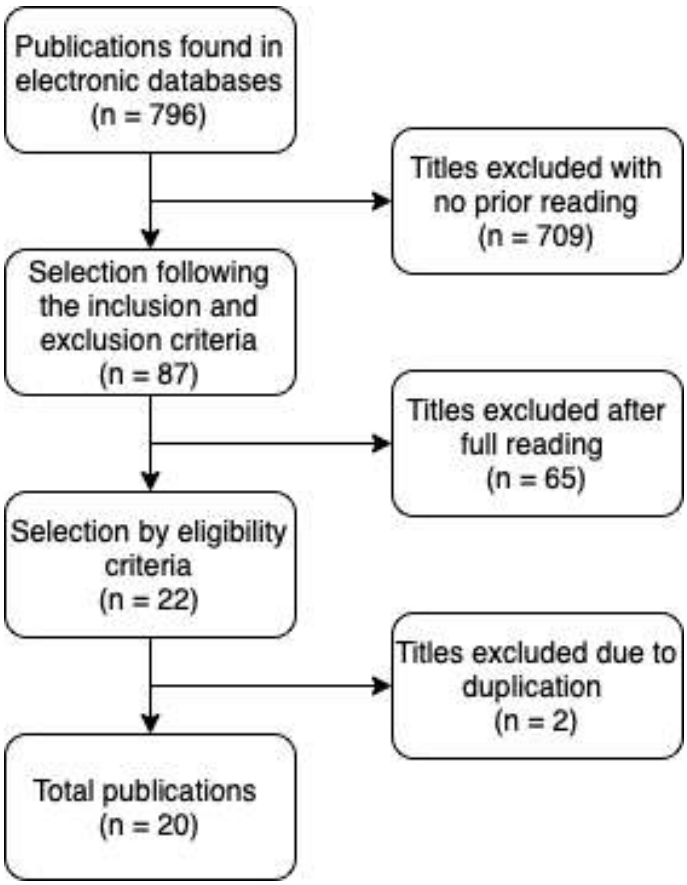
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The publications were independently evaluated by the three authors (researched between late 2022 and early 2025) based on the inclusion and exclusion criteria and by reading their titles and abstracts. The paintings were analyzed according to the subjective selection and interpretation criteria of the authors of this study. The material research included cultural and biological aspects of epidemics, in addition to semiological analyses of the different views on epidemics throughout the history of humanity in the last millennium.

RESULTS AND DISCUSSION

Applying the descriptors and Boolean operator as described above, 796 publications found in electronic databases were initially collected. Of these, 87 were selected following the inclusion and exclusion criteria and applying the filters. After reading the publications in full, 22 were selected, of which 2 were excluded due to duplication, totaling 20 publications selected for this study (Figure 1). In relation to the paintings, two images compatible with the epidemics studied in the selected publications were chosen and downloaded in high resolution.

Figure 1. Flow diagram of the study design



As a synthesis of the selected publications, information was obtained about the epidemiology, pathophysiology, and social and technical-scientific context of the epidemics analyzed. Table 1 summarizes the findings of each of the publications selected.

Table 1. Brief summary of the publications selected according to the topic covered

Topic covered	Summary	Reference
Art and medicine	It discusses a program that uses representational narrative paintings at the Yale Center for British Art to train detailed observations and analytical skills, aiming to improve students' communication and observation skills, critical for doctors.	Friedlaender and Friedlaender[8]
Art and medicine	It correlates arts learning with biological changes and cognitive and academic advantages, defending that arts may be essential for promoting 21st century skills such as creative thinking and problem solving.	Hardiman[3]
Black Death	It states that early diagnosis of diseases is of paramount importance, and that addressing practical aspects of the plague, such as symptoms, diagnosis, treatment, and prevention, is absolutely necessary to raise awareness among health professionals.	Yang[18]
Black Death	The study deals with the evolution, immune evasion, vaccination, and diagnosis of Black Death.	Demeure et al.[19]
Epidemics	It addresses how intermittent outbreaks of infectious diseases throughout history have had profound and lasting effects on societies, shaping economic, political, and social aspects of human civilization. It also highlights some of the most notable epidemics.	Huremović[9]
Art and medicine	It reviews the literature on the training in visual arts in medical education, focusing on preclinical students, development of	Mukunda et al.[6]

	observational and diagnostic skills, empathy, teamwork, communication skills, resilience, and cultural sensitivity.	
COVID-19	It discusses how the current model of human development negatively impacts the environment, increasing the transmission of infectious diseases, such as COVID-19, through the degradation of ecosystems and climate change.	Acosta et al.[20]
Black Death	The text addresses *Yersinia pestis*, which causes bubonic plague, its persistence in specific areas, transmission by fleas, symptoms and treatment, and its long history of human infection, including three epidemics, the Justinian Plague, the Black Death, and the most recent one, in China.	Barbieri et al.[21]
Epidemics	It traces the history of epidemics from Roman times to the present day, highlighting their human cost such as social inequalities, evolving with technological progress and requiring measures such as social distancing to contain their spread.	Dasgupta and Crunkhorn[22]
Black Death	It reports the historical origin of quarantine during the bubonic plague epidemic in Europe in the 14th century, explaining how this isolation measure emerged and its relationship with religious events related to the number forty.	Geraldes Neto[23]
COVID-19	It describes the most common symptoms of SARS-CoV-2 infection, emphasizing the variety of clinical manifestations, as well as the importance of a sensitive case definition to guide health actions.	Iser et al.[24]
COVID-19	It analyzes the coronavirus in a biological way, describing its etiology, in addition to providing an overview of the beginning of the 2019	Lana et al.[25]

	epidemic and highlighting the impact of the high transmissibility of the disease.	
COVID-19	It discusses paintings and pays homage to the lives of people who died in the COVID-19 epidemic.	Patel[26]
COVID-19	It highlights SARS-CoV-2, an RNA+ virus that belongs to the Coronaviridae family and shares genetic similarities with the 2003 SARS virus. Its structure includes four essential proteins, responsible for the entry of the virus into cells and viral replication through a process of RNA+ to RNA-.	Uzunian[27]
Epidemics	It discusses the importance of epidemiology in preventing global epidemics, emphasizing the need to mitigate causal factors to improve the health of all people around the world.	Adams et al.[28]
Black Death	It explores the history of this epidemic, the transmission by fleas in rats, new theories of transmission, symptoms and treatments, and it also mentions its potential as a bioterrorist weapon.	Glatter and Finkelman[29]
Black Death	It gathers research for a qualitative and comparative analysis of the impacts of this epidemic on humanity, demonstrating that previous epidemics have influenced social, economic, and political changes.	González Toapanta[11]
Black Death	It investigates the transmission of the bubonic plague from human corpses and animal carcasses.	Jullien et al.[30]
COVID-19	It addresses the importance of communication between patients and healthcare professionals, especially in challenging situations such as the COVID-19 pandemic. It also highlights the effectiveness of training in improving healthcare professionals' communication skills and	Rock[31]

	patients' experience.	
COVID-19	It examines the lingering effects of COVID-19 on patients more than 3 months after the infection, finding that they may experience respiratory symptoms, fatigue, decreased functional capacity, and reduced quality of life up to 6 months after the infection.	Sanchez-Ramirez et al.[32]

Black Death

The Black Death was one of three major epidemics caused by a common agent, the Gram-negative bacteria *Yersinia pestis*. This vector-borne illness is transmitted to humans by fleas that infest rodents infected with these bacteria.[19] The first major epidemic caused by this pathogen was the Justinian Plague, between the 6th and 8th centuries; the second was the Black Death, or Bubonic Plague, between the 14th and 18th centuries; and the third occurred in southwestern China in 1855.[21,29]

In view of this, it is believed that the second outbreak, or Black Death, appeared in Central Asia, close to the region where Mongolia is now located. The disease began to spread to other regions such as the Middle East and Europe. Around 1347, the plague reached Europe via a commercial sea route to the city of Sicily, Italy. From there, the disease was quickly and devastatingly spread to all the cities along the Italian shipping trade routes, killing more than a third of the European population at the time, around 25 million people. [23,29]

In the 14th century, the infected people developed the initial symptoms of the disease after the incubation period, of 24 to 96 hours, which made the disease almost always fatal. Therefore, the diagnosis was purely clinical. The bubonic form was the most common, characterized by an abrupt onset, high fever, chills, headache, and asthenia, in addition to swollen and painful lymph nodes, popularly called “buboes”, very common in armpits, groin, and neck. The death rate varied in different parts of Europe. However, in some areas, it is estimated that it reached 50% of the population. Currently, *Y. pestis* continues to be endemic in some regions. Nowadays, the disease can be diagnosed by pathogen isolation and culture, as well as the detection of its specific biomolecules found in clinical samples collected from infected patients.[21]

Semiologically, this plague can be divided into three predominant clinical forms. The most frequent variety is the bubonic form. The infected individuals characteristically manifest sudden high-grade fevers (> 39.4°C), intense pain in the limbs and abdominal region, along with headaches, generally three to seven days after the contact with the bacterial agent. The bacteria

reproduce rapidly in the lymph nodes located closest to the flea bites, resulting in painful swellings called “buboes”, which can enlarge to approximately 10 cm in diameter. [18,29]

In the second clinical form, named septicemic, bacteria multiply in the blood of individuals, triggering a change in the clotting cascade. This favors the development of disseminated intravascular coagulation, which in turn is associated with gangrene in the extremities, ears, and nose. This is the rarest form of the disease, responsible for 10% to 15% of cases.[29] The patients can also have “buboes” in the body. Nonetheless, they tend to be smaller than those of the bubonic form. In addition, ecchymoses and even gangrene can occur, which is not evident in the other clinical forms.[18]

The third clinical form, fulminant pulmonary plague syndrome, is the most fatal one. It is the only form with transmission between people, like that of the new coronavirus, through droplets in the air. In this case, inhalation of aerosolized droplets from infected patients or even animals predominantly affects the respiratory tract, generally not forming “buboes”, but quickly causing coughing up and death.[19] The initial symptoms, similar to those of the common flu, include sudden fever and difficulty breathing within four days of exposure to the bacterial agent, quickly progressing to a purulent, frothy, or bloody cough. As this clinical form is specifically transmitted through the air, fulminant pulmonary plague syndrome could be used in biological attacks.[29]

During the second outbreak of the disease, or Black Death, one of the most famous and memorable artistic movements in history began: the Renaissance. This period was marked by humanist ideals that revived the values of Classical Antiquity, notably Greek and Roman cultures. Renaissance works of art often explore themes ranging from religious and historical subjects to scientific aspects. Thus, art played a significant role as a means of representing not only the reality of the time, but also important events, such as the devastating Black Death.

The work of art in Figure 2 shows a representation of a couple in supine position, with the presence of “buboes”, portraying, in a shocking way, the devastating effects of the Black Death on the population of that time.[33] The painting evidences characteristics consistent with the bubonic form of the disease, notably the presence of visible “buboes” on the upper limbs, lower limbs, abdomen, chest, neck, and face of the couple. Due to the high transmissibility of this plague, quarantine was introduced to control this epidemic.[23] given that the Black Death can even be directly transmitted by bodily contact with an infected person.[30]

Figure 2. Untitled medieval painting, by unknown author, on a 1411 Bible from Toggenburg, Switzerland, written in German, portraying a man and woman with the bubonic form of the Black Death and its characteristic “buboes” spread on their bodies (Getty Images, 2025). Illustrative reference. [33]



The presence of a man, with blond hair and beard, in the background of the painting, seems to allude to the sacred. His garment can indicate he is a cleric, an inference supported by the fact that it bears blue, at that time a shade associated with nobility, i.e. a higher social status. Historically, in the 14th century, society was organized into different social strata, and both the high and low clergy held prominent positions at the top of this social hierarchy. Analyzing his arms outstretched toward the sky, it is plausible to conclude that he is engaged in an act of prayer, turning to God in supplication for the sick couple’s salvation, a common religious practice back then.

In the image, it can be seen that the “buboes” do not follow the pattern of location in the lymphatic chain but are distributed in a widespread manner throughout the bodies. Therefore, this representation is not in line with the typical lymphatic involvement observed in the bubonic plague. However, this is not enough to be interpreted as the presence of another disease, since at that time, artists probably had limited knowledge of human anatomy, depicting the disease based on oral lay reports and in their imagination.

It is possible to consider for this painting the differential diagnosis of smallpox, an infectious disease transmitted from person to person through infected droplets or direct contact with skin lesions. Smallpox pustules begin with tiny erythemas, which evolve into papules and, later, into vesicles. In the final stage, the pustules form, which may or may not have a dark center.

They are typical of smallpox and can appear on several parts of the body, including hands and feet. Nevertheless, they are smaller than the buboes of the bubonic plague, generally ranging from 0.5 cm to 1 cm in diameter. [9]

COVID-19

The new coronavirus, also known as SARS-CoV-2, responsible for the COVID-19 epidemic belongs to the Coronaviridae family and the Orthocoronavirinae subfamily. It has a characteristic viral structure, composed of a positive-sense, single-stranded RNA genome, encapsulated by a lipid membrane, and its molecular structure houses four main structural proteins, namely the spike protein, the membrane protein, the envelope protein, and the nucleocapsid protein.[27] In a short period, since 2002, there have been three notable outbreaks of coronaviruses, agents of respiratory diseases, i.e. SARS-CoV, MERS-CoV, and the recent SARS-CoV-2. The new coronavirus originally infected wild animals such as bats, but has acquired the ability to infect humans, causing the zoonotic disease COVID-19, representing a global health threat.[20]

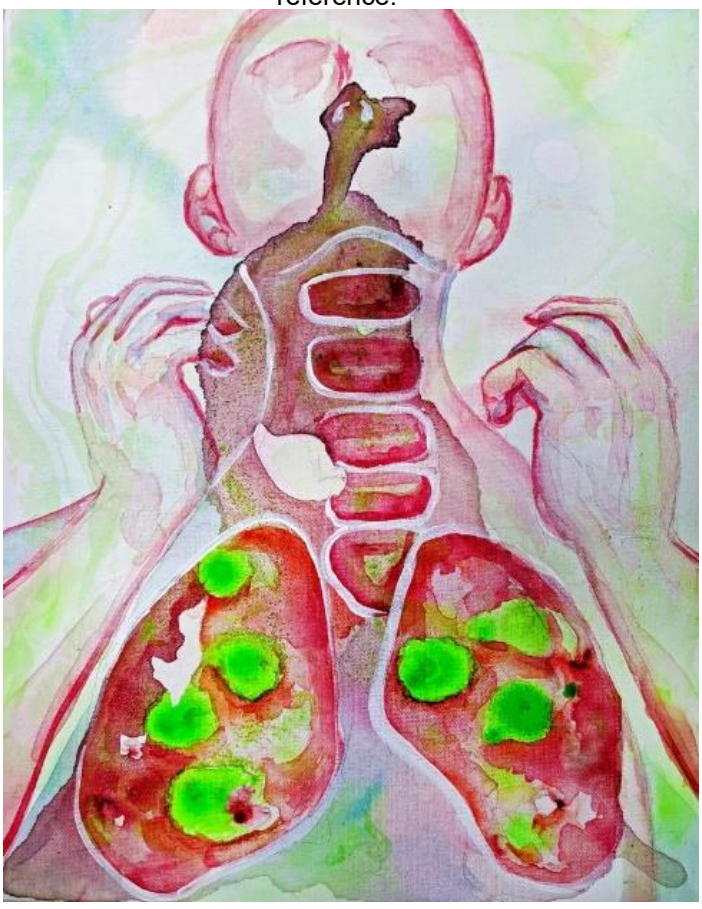
The COVID-19 outbreak began in 2019 in Wuhan, China. [34,35,36,37] The new coronavirus quickly spread within that vast country and then to 213 other nations and territories all around the world. The emergence of a new coronavirus posed a considerable threat to global health, since it revealed to have the potential to trigger a pandemic by infecting the previously unexposed human population. The speed at which the virus spread, even among asymptomatic people, showed its high transmissibility rate. Given that SARS-CoV-2 is an airborne virus, its main form of transmission between humans occurs through respiratory droplets expelled by infected individuals while coughing and sneezing (aerosols).[25]

In primary care, COVID-19 has several forms, mainly respiratory, but also with multiple symptoms, often difficult to label, and with variable temporal patterns (Sanchez-Ramirez et al., 2021).[32] To date, its semiological diagnosis focuses on respiratory symptoms, with fever, cough, and dyspnea as the main symptoms. Non-respiratory symptoms such as fatigue, lack of appetite, muscle and joint pain, and paucisymptomatic respiratory forms should be included at the same level of suspicion as upper airway symptoms.[24]

Colette Nadon, who was completing a Bachelor of Fine Arts Degree in Art and Design, with a main focus on painting (FAB Gallery and Art & Design).[38] has published in The Gateway a series of three paintings, named *Effects of COVID-19 captured on canvas*.[39] The Gateway is the official monthly online student magazine of the University of Alberta, Canada, published by the Gateway Student Journalism Society, an autonomous, non-political, not-for-profit student organization. Figure 3 shows one of these paintings, named *Sharp Breaths*.

In *Sharp Breaths*, Collete employed a visceral and impactful approach to portray the COVID-19 pandemic. The prominent image of the lungs directly refers to the characteristic respiratory symptoms of this disease such as severe pneumonia. The green spots seem to symbolize the virus infecting the lungs, transmitting the sensation of suffocation and respiratory distress associated with the disease. While these green spots can be interpreted as a visual representation of the inflammatory lesions caused by the infection in the lung tissues, the choice to depict a human figure in the background, in relation to the lungs, emphasizes the centrality of the respiratory system to understand the disease by alluding to the acute respiratory difficulty often associated with COVID-19. In addition to the pulmonary characteristics, the artist explores other semiological elements such as systemic inflammation by using warm, reddish tones, referring to fever, flushing, and pain. The very choice of the title, *Sharp Breaths*, also contributes to the interpretation of the painting, as it evokes not only the physical aspects of the disease, which include respiratory distress, but also the acute anxiety generated by a turmoil of emotions and psychological challenges affecting people at that unprecedented moment.[39]

Figure 3. *Sharp Breaths*, acrylic on canvas, by Colette Nadon, illustrates the new coronavirus (SARS-CoV-2) particles entering the human body and infecting the host (Nadon, 2020). Illustrative reference.[39]



In addition to this interpretation, the health crisis of the COVID-19 pandemic evidenced the importance of quickly adapting to emergency situations and understanding basic health principles. Due to the COVID-19 pandemic, several public health measures such as social distancing, use of masks, and frequent hand hygiene had to be implemented and were rapidly incorporated in people's routine.[26] The highly transmissible nature of SARS-CoV-2 required an agile response to contain its spread, leading to the global coordination of public health efforts.[22] Furthermore, modern technological infrastructure, such as the Internet and telecommunications, has allowed the rapid dissemination of information and guidelines to the general public. This has been reflected in a more interconnected society with access to information, so that people can respond to public health crises in a more coordinated way.

As a consequence, the 2020 pandemic changed the way health professional schools around the world develop and transfer knowledge and teach necessary skills to prepare qualified doctors. They have been focusing more on communication skills, empathy, and teamwork, emphasizing their importance in the medical field. The increased demands for care during this period reiterated the relevance of qualified professionals who not only acquire and apply solid clinical knowledge but are also able to communicate effectively with patients and work collaboratively with other healthcare professionals.[31]

Black Death and COVID-19

Comparing Black Death and COVID-19 outbreaks, it is interesting to observe that, although these two diseases emerged at different times and in different contexts, they share similarities, mainly in terms of dissemination, effects on the population, and socioeconomic transformations. During the 14th and 17th centuries, Black Death devastated much of Europe, utterly changing society at the time. In turn, the COVID-19 pandemic highlighted globalization and the fluidity of the modern world, which led to the mandatory adoption of containment measures such as lockdown, negatively affecting the global economy and everyday life worldwide.

Despite the parallel that can be drawn between the two outbreaks, marked differences can be noted in health knowledge and medical advances acquired over time to contain the most recent one and future similar events.[28] The COVID-19 pandemic painted a picture of a very coordinated response from modern society to plagues, with the production of accurate official statistics made available weekly and even daily, isolation imposed by governments worldwide, and public commotion due to an illness with rapid transmissibility and high lethality. And even people's own reactions, which ranged from fear of contracting the disease to defending personal interests, wove the interpretation of the coronavirus outbreak by 21st century individuals.

Among other similarities between Black Death and COVID-19, the following are worth mentioning: no cure was possible at the time of their outbreak, the treatment was mainly

supportive, and the strategies to control the disease were based on prevention and reduction of transmission. On the one hand, Black Death was a pre-scientific epidemic, with a rudimentary clinical diagnosis. On the other hand, although the medical community had much more advanced technological and scientific development to deal with COVID-19, they still faced numerous challenges such as the need to rapidly identify the causal agent and develop diagnostic tests and vaccines. In the 14th century, only a very small part of the population had access to doctors, different from today in many countries.

Analyzing the portrayal of these epidemics in art, we can first make a comparison between Renaissance and modern painting. Byzantine/Renaissance artists often adopted a more tragic and playful approach to represent diseases. At that time, artistic representation was influenced by religious beliefs, resulting in an often allegorical and symbolic interpretation of illnesses. Epidemics were depicted as tragic events, but they were also often filled with symbolism and metaphors that transcend reality.

In contrast, in modern art, we observe a tendency towards a more realistic and anatomical representation of epidemics. Contemporary artists often approach these events in a more direct manner, capturing the physical and psychological aspects of illness more explicitly. Their emphasis is on the expression of human tragedy and the immediate impact of epidemics, without necessarily seeking allegories or symbolism. Additionally, taking into consideration the semiological aspects found in the paintings of the two diseases, Black Death was characterized by painful and swollen “buboes”, while COVID-19 was represented by systemic respiratory distress, and can even be compared with the pulmonary form of Black Death.

CONCLUSION

We conclude that works of art provide a unique approach to explore the complexities of human experience, allowing students to delve into medical issues not only from a scientific point of view, showing the clinical aspects of these diseases, but also from emotional, cultural, and ethical perspectives, revealing the underlying emotional and social contexts of these illnesses. Thus, the study of epidemics through art can reshape the way health education institutions around the world approach the training of qualified doctors, which can direct their attention to communication skills, empathy, and teamwork, all of which are important resources in the medical context.

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