

Review Article

Journal of Medicine and Surgical Sciences

History of Pandemics and epidemics in the World: What are the lessons we must be learn? A Scoping Review article

Gustavo G. Gómez^{1*}, Jatniel H. Delgado², Oscar F. Araneda³, Mauricio Soto⁴, Hernán E. Lechuga⁵ and Massimo Pandolfi⁶

¹Bachelor of Medicine, Undergraduate Department, Universidad Finis Terrae, Independencia, Chile

²Medicine Student, Undergraduate Department, Universidad Católica del Norte, Coquimbo, Chile

³Ph.D. Integrative Laboratory of Biomechanics and Physiology of Effort, LIBFE, School of Kinesiology, Faculty of Medicine, Universidad de Los Andes, Chil in Exercise Physiology, Department of Health Sciences, Universidad de Los Andes, Apoquindo, Chile

⁴Centro de Investigación en Educación Médica y Ciencias de la Salud, Universidad Finis Terrae

⁵Forensic Medical Expert, ILTMA Supreme Court, Surgeon, University of Chile, Children Surgeon, Santiago Chile; ⁶Cardiologist, University of Firenze, Department of Surgery, Ospedale Serristori, Figline Valdarno, Italy

Abstract

Introduction: Since the dawn of humanity, the human species has faced various epidemics that have decimated its population. Various causes have given rise to these epidemics, whether it is population growth, overcrowding, lack of services and basic hygiene supplies, Wars, and famines, all have contributed in one way or another to the start of a pandemic. Understanding the phenomena and events that occurred in the past will allow us to understand our present and project ourselves toward our future.

Evidence Acquisition: A PubMed, Scopus, Lilacs, and Web of Science Scoping Review was carried out in the last five years, using the PRISMA-P method and the Scoping review search strategy. The MeSH terms "medicine history", "Pandemic", "epidemic", "mortality", "Italy, Chile" and "epidemiological dynamics", with the strategy of (" history"[Subheading] OR "history"[All Fields] OR "history"[MeSH Terms]) AND

pandemic [All Fields] AND ("Italy"[MeSH Terms] OR "Chile"[All Fields])) AND (" 2017/03/07"[PDat]: "2022/03/05"[PDat]) search. Finally, papers focused on the COVID-19 pandemic were excluded, as it is too early for a comprehensive assessment of its long-term impact and effects.

Evidence Synthesis: This literature review found between 2016 and 2022, 3425 articles of which 30 met the inclusion criteria, showed that they have not always been taken into account and only recently consensus has been created and guidelines have been created by the WHO (World Health Organization) and medical societies dedicated to the study of epidemiology and public health, so it has been possible to control better and predict the epidemiological and social behavior of the human species against the great Pandemics and Epidemics of history.

Conclusion: Systematic study of the history of medicine and pandemics will enable us to prevent and be better prepared for, and ideally anticipate, the emergence of new viral, bacterial, and protozoan variants, in the context of humans as part of a planetary ecosystem.

Key Words: *Pandemic, Epidemiology, History of medicine, Chile, Italy*

“Six mistakes mankind keeps making century after century:
Believing that personal gain is made by crushing others;
Worrying about things that cannot be changed or corrected;
Insisting that a thing is impossible because we cannot accomplish it;
Refusing to set aside trivial preferences;
Neglecting development and refinement of the mind;
Attempting to compel others to believe and live as we do.”
— Marcus Tullius Cicero

Introduction

Humanity has been faced with more than 20 major pandemics since the first Homo Sapiens appeared in Africa and spread to the rest of the globe, which spread throughout the continents when they came into contact with other human species that inhabited. The study by anthropologists, archaeologists, and paleoanthropological evidence and bone remains, and human beings have shown the presence of protozoa of malaria, brucellosis, and cholera in bone remains and teeth of the first australopithecines found in the Grand Rift and in Lake Turkana, the presence of cholera in the bones of hominids in Laetoli as a result of ingestion of contaminated water and which caused great mortality in the first hominids. (1,2,3).

During much of ancient times and the beginning of the Middle Ages, humanity was faced with pandemics such as smallpox, tularemia, measles, and black plague, which decimated and generated great transitions in our way of living, moving, and even how we relate. It was not until the middle of the 7th century that

Chinese priests and doctors made use of the scabs of smallpox patients to prepare an extract that was aspirated by people who had not yet gotten sick, starting the first methods of adaptive immunization. (1,4).

Acquired artificial, a principle of the first vaccinations, techniques that were acquired by the Byzantines after having faced two great pandemics, the black plague in addition to the time of Justinian and that of smallpox and leprosy in the eighth century, a technique that was adapted and gave based on the direct inoculation of the pustules of previously infected people with small glass pipettes, which were adopted by the Russian Empire during the government of Catherine the Great, who contracted French doctors to start massive inoculations in ODESSA, Turkey and Greater part of the Russian West. (30,31,48).

It was these techniques that Edward Jenner imitated and adopted in the eighteenth century to perform the first inoculation of the pustules of a milkmaid to his own son in 1776, presenting a small infection with very mild symptoms, defining the word vaccine from the Latin vaccina, laying the foundations of vaccination techniques, to later spread to the Americas, being a pioneer in this area a Chilean Dominican friar who adopted these techniques and created through the variolization of the Americas by the protomedicato instructed by the court of the royal hearing and the council de Indias the first massive vaccination that was carried out in the south of Peru, Bolivia, the Viceroyalty of La Plata and the province of Nueva Extremadura corresponding to Chile and the Chilean and Argentine Patagonia, being the organizer and general coordinator of the campaigns Fray Luis Chaparro, during much of the old country and the new country even when the Spanish royalist forces were definitely expelled definitively from the national territory with the taking of Chiloé and Valdivia and their fortifications.

In parallel while our Chilean nation began its independence process, the young Italy submitted to the Austrian absolutist yoke and distributed in the papal states, simultaneously began its independence process initiated by Giussepe Massini, with the Young Italy manifesto, who settled the bases of the independence process that will be finally carried out by the leader of the red coats Giussepe Garibaldi and King Victor Emmanuelle King of Italy, who after the battle of Magenta and Solferino (1874-1876), achieved the definitive victory over the forces Austrian and Bourbon, and the definitive expulsion beginning a long path of unification, where social differences, inequities, poverty and injustice caused by the years of war contributed to the appearance of epidemics in the main Italian cities accompanied by other epidemics such as malaria, tuberculosis and variola, which forced to modify the urban planning based on the deterministic sanitary thesis supported by virchow, transforming the streets into true sanitary corridors analogous to the circulatory system, building sewage systems, bridges, dams, channelling rivers and sanitizing poor neighbourhoods where rodent and lice plagues reigned , being eradicated by the state health system and a group of scientists from the universities of Turin, Padua, Federico II Naples, Siena, Salerno and the Sapienza of Rome, who left a legacy that transcended borders and reached our country Chile at beginning of the 20th century with Dr. Giovanni Battista Noé Crevanni, Juan Noé who with his ark brought all the innovations and techniques for the control and isolation of pests through the introduction of fish and zoological species in order to control the culex pipens

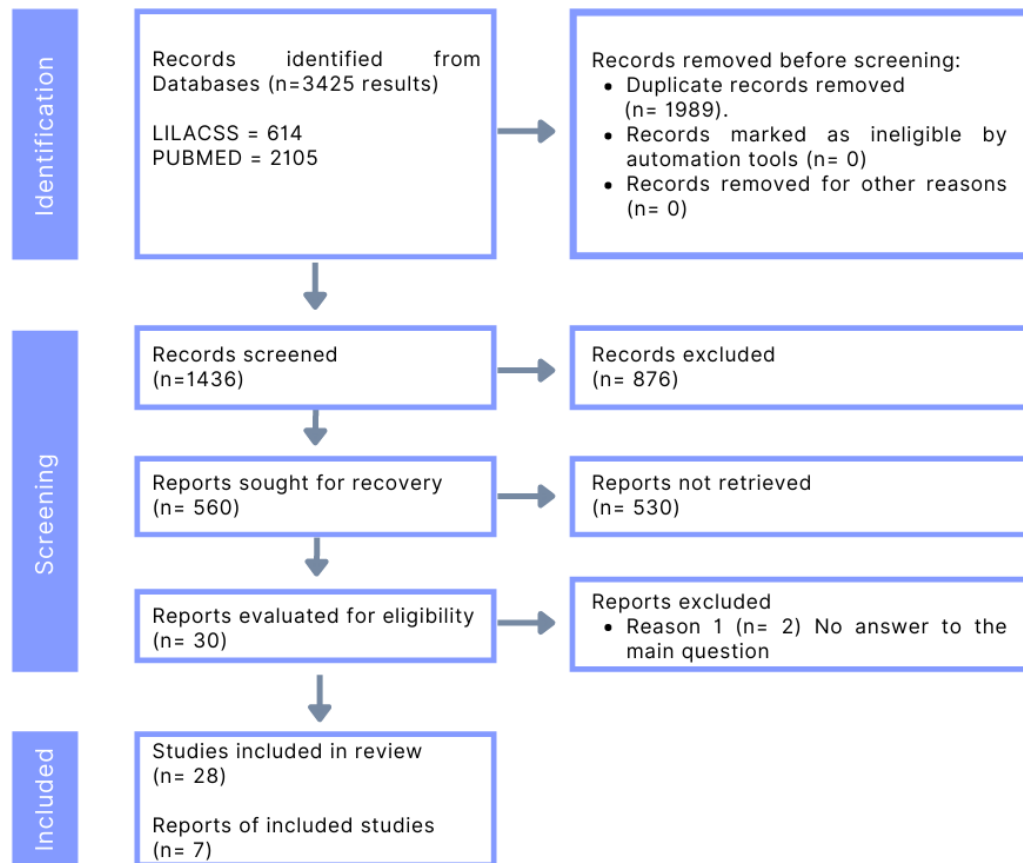
mosquitoes that carry the malaria and yellow fever managed to definitively eradicate by applying the knowledge of the anatomy, biology, physiology, zoology and botany, controlling the epidemics inherited from the Pacific war. (1, 4, 10).

The impact that pandemics have had on our ways of life and on how we organize ourselves has caused different authors, poets, and writers to write about epidemics and pandemics and their consequences. Examples of this are the Gilgamesh narratives, Ebner papyrus chronicles of ancient Egypt, the story of the exodus and the 10 plagues of Egypt in the story of Moses, and innumerable writings collected by chroniclers, historians, poets, and doctors who were collecting information and describing the signs and symptoms of diseases and the implications that these had around changes in behavior and the lives of people in the different times that were faced each other. Understand What is the role of the history of medicine in the human sciences? It is key when defining strategies and methods to make adequate and correct decisions when facing a pandemic. Below are examples of how historical and social circumstances directly affected and generated the first outbreaks, epidemics, and major pandemics in the history of humanity and what measures were taken in each historical time to deal with pandemics. (30,41)

Evidence Acquisition

This literature review aims to illustrate, compare and discuss the mechanisms through which pandemics affect social development and long-term health systems. To achieve this goal, we adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology (Moher et al. 2009). First, we define a list of keywords that express the main aspects of the concepts of "pandemic" and "epidemic". Second, we create the search strategy based on the mesh terms (("history"[Subheading] OR "history"[All Fields] OR "history"[MeSH Terms]) AND pandemic [All Fields] AND ("Italy "[MeSH Terms] OR "italy"[All Fields])) AND ("2017/03/07"[PDat] : "2022/03/05"[PDat]). Only those articles whose language was not English, Spanish or Italian were excluded. Once the information was obtained, a critical documentary analysis was made of the articles referenced by two independent observers, from whom the name of the authors was hidden. The original documentary archives of the national archives in Chile and Italy were searched, respectively, to obtain the primary sources for later analysis.

Figure1: Workflow Prisma. From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372: n71. DOI: 10.1136/bmj. n71



Question number	Research Question	Quotations that were used to answer these questions	Data Items
1	What were the key milestones that started the great pandemics of humanity?	1-10	(1) Pandemics in humanity (2) Epidemics dynamics
2	What were the most important measures that were taken to be able to deal with them?	11-29	(3) History of Pandemics (4) History Epidemics (5) History of Medicine (6) Health determinants

			(7) Socioeconomic Organization (8) Health System Organization
3	And what were the consequences that they had in the history of humanity and the role that medical education had in the measures that were implemented at the time of ending the pandemics?	30-48	(9) Medical education (10) Education System (11) Chile-Italy (12) Ecosphere, biosphere, and anthroposphere

Table no 1: Research Question-based in Scoping Review Methodology Pandemics in Chile-Italy and the World.

Evidence Synthesis

We grouped the studies by the types of behavior they analyzed, and summarized the type of settings, populations, and study designs for each group, along with the measures used and broad findings. Where we identified 27 primary studies, we counted the number of studies included in the review that potentially met our inclusion criteria and noted how many studies had been missed by our search. We analyzed 10 secondary studies and 10 primary historical resources, who included in the framework of this study.

History of the Pandemics of Antiquity: From the epidemic in the government of the heretic pharaoh Akhenaten to the plague of the Hittites

During the reign of Amenhotep III, a schism occurs between the years 1347 to 1343 BC. The son of King Amenhotep III, who adopted the name of Akhenaten, established a monotheistic theocratic system, refounding the State and society, abolishing the old polytheistic theocratic system, leaving the God Aton (sun disk) as the most important God of the Egyptian pantheon from the time of the Middle Kingdom,

moving the capital of the empire from Memphis to Amarna, from where the pharaoh's retinue annulled the power of the priests of the god Amun, which triggered a civil war and a social crisis, originating the first great pandemic of human history a possible outbreak of smallpox is postulated, it could also be typhus or even tularemia which caused the death of a large number of people. This disease caused the death of tens of thousands of enslaved Egyptians who were used in the construction of the limestone and marble quarries for the construction of the new temples dedicated to the solar God Aton. It is estimated that 43% of the burials correspond to Multiple graves while 50% of the total presented malaria inside their bones; This denotes that there was an epidemic outbreak among the Slaves that had fleas and ticks, which probably transmitted the deadly disease that is still an Enigma in our society, which is leprosy.

Amenhotep III, father of Akhenaten and son of Hapu: « [King Amenhotep III] had the desire to contemplate the gods [...]. His namesake replied that he could see the gods if he cleansed the whole earth of lepers and polluted people. The king was satisfied with this answer and ordered to gather all those who were in Egypt whose bodies were suffering from disease. In total there were 80,000. He then deported them to the quarries east of the Nile to work there separately from the rest of the Egyptians. Among them, adds Manetho, were some educated princes who had been affected by leprosy » 48. Josephus: Against Apion I [Internet]. Uchicago.edu. [citado el 26 de junio de 2022]. Disponible en: <https://penelope.uchicago.edu/josephus/apion-1.html>



Figure 2: Eber's Papyrus from the Antient Egyptian empire - uploaded by Tarek Kahil

While the Egyptian slaves died in the quarries of Amarna; the kingdoms of Cyprus, Meggido, Canaan, and the Kingdom of the Hittites also showed signs of this disease, which manifested itself with black spots on the body as recounted in the Egyptian Papyrus, while Hearst and in the London Papyrus, it speaks of « the Asian disease », which manifests itself "when the body is blackened with black spots".

In the case of the London Papyrus, the cure lies in applying a spell that must be recited in "the language of the Keftiu", the people of Crete. This caused severe damage to the Hittite, Hebrew, Egyptian, and even Anatolian people with whom the Egyptians had mutual commercial networks of exchange, which would

have more easily transmitted the disease to the rest of the peoples. It is thought that according to testimonies and papyri from the time of the time, the subsequent Decade transmitted by rat fleas, with tularemia, the black plague, and malaria itself being one of the key targets for elucidating the causes of this epidemic that became a pandemic during the time of the Egyptian Middle Empire.

- *Oh! gods, my lords; what is this? You have allowed the plague to enter Hatti so that Hatti has been very oppressed in the time of my father [Suppiluliuma], in the time of my brother [Arnuwanda II], and now [...]. For twenty years, people have been dying [in large numbers] in Hatti. Hatti [has been severely damaged] by the plague [...]. [If someone] has a child [...] the plague [snatches it away]. If he reaches adulthood, he will not reach old age [...]. When men are dying in the country of Hatti and the plague has by no means disappeared from the country of Hatti, I can no longer suffer the agony of my heart and I can no longer suffer the anguish of my soul [...]. I have admitted my guilt before the God of the Tempest [...]. Hear me, Storm God of Hatti, and save my life!"* Habicht ME, Eppenberger PE, Rühli F. A critical assessment of proposed outbreaks of plague and other epidemic diseases in Ancient Egypt. Int J Infect Dis. 2021 Feb; 103:217-219. doi: 10.1016/j.ijid.2020.11.160. Epub 2020 Nov 20. PMID: 33227516. Norrie P. A history of disease in ancient times: More lethal than war. Springer; 2016 Jun 25 (5).

The Plague of Athens by Thucydides and Sophocles framed in the History of the Peloponnesian War

After the creation of the Delian league by Athens and the Peloponnese by Sparta, after the end of the Medical Wars; The dispute over the hegemony of the Balkan Peninsula gave rise to the so-called Peloponnesian War where the victors of the Persian wars entrusted by Pericles were able to rebuild the Acropolis and the city of Athens with the taxes and profits obtained from the taxes of the cities loyal to Athens caused a political and economic conflict between two great superpowers that occasioned in the second year of the war in 430 BC the so-called plague of birds where not only the Athenian peasants and citizens fell victim but also Pericles himself who He died shortly after contracting the disease. Just as he describes the symptoms of the disease with a descriptive rigor typical of the scientific method, Thucydides decides to become independent of religious beliefs and takes hold of the Hippocratic medical sciences, explaining that: "Suddenly they first had intense fevers that affected the head, redness, and swelling of the eyes, and, inside, the throat and tongue became bloody and exhaled a strange and pestilent breath. Then, from these symptoms, sneezing and hoarseness ensue and, in a short time, the condition descended to the chest accompanied by a strong cough; when it fixed on the stomach, it upset it and produced vomiting of bile."

Simultaneously, Sophocles fought in the war and even the Greek philosopher Socrates, who served both in the Peloponnesian War and in the care of patients in temples and cities during the epidemic, participated and lived through the epidemic, describe in a rather mythical way what happened in the city attributing to the celestial influences and to the offense of the god Apollo who, offended by the arrogance of the Athenians and putting in the center the riches obtained in the port of Piraeus and not the gods, triggered

this epidemic, being the leitmotif of the work of Oedipus the king the cause of the epidemic the incest of his mother the impurity and death of his subjects for which he must pay with his life or in the best of cases with the loss of his vision, gouging out his own eyes and not being able to escape to the inexorable destiny of the gods being the base the tragedy and the ode to the gods the fatal destiny of the human being and his submission to the divine will.

Finally, after 26 long years of war and multiple deaths attributable to the so-called plague of Athens which could be bubonic plague, smallpox and even typhus as various sources say, Athens lost in the battle of Aegospotami to the Spartan army who a few years later was finally destroyed by the forces of the father of Alexander the Great, the lame Filippo II who finally designed the foundations of the Panhellenic dream that Aristotle proposed so much in his various writings and teachings.

After the creation of the Delian league by Athens and the Peloponnese by Sparta, after the end of the Medical Wars; The dispute over the hegemony of the Balkan Peninsula gave rise to the so-called Peloponnesian War where the victors of the Persian wars entrusted by Pericles were able to rebuild the acropolis and the city of Athens with the taxes and profits obtained from the taxes of the cities loyal to Athens caused a political and economic conflict between two great superpowers that occasioned in the second year of the war in 430 BC the so-called plague of birds where not only the Athenian peasants and citizens fell victim but also Pericles himself who He died shortly after contracting the disease. Just as he describes the symptoms of the disease with a descriptive rigor typical of the scientific method, Thucydides decides to become independent of religious beliefs and takes hold of the Hippocratic medical sciences, explaining: "Suddenly they first had intense fevers that affected the head, redness, and swelling of the eyes, and, inside, the throat and tongue became bloody and exhaled a strange and pestilent breath. Then, from these symptoms, sneezing and hoarseness ensue and, in a short time, the condition descended to the chest accompanied by a strong cough; when it fixed on the stomach, it upset it and produced vomiting of bile."

Simultaneously, Sophocles fought in the war and even the Greek philosopher Socrates, who served both in the Peloponnesian War and in the care of patients in temples and cities during the epidemic, participated and lived through the epidemic, describe in a rather mythical way what happened in the city attributing to the celestial influences and the offense of the god Apollo who offended by the arrogance of the Athenians and putting in the center the riches obtained in the port of Piraeus and not the gods deschain this epidemic, being the leitmotif of the work of Oedipus the king the cause of the epidemic the incest of his mother the impurity and the death of his subjects for what he must pay with his life or in the best of cases with the loss of his vision of himself gouging out his eyes and not being able to escape the inexorable destiny of the gods, the basis being the tragedy and the ode to the gods, the fatal destiny of the human being and his submission to the divine will.

Finally, after 26 long years of war and multiple deaths attributable to the so-called plague of Athens which could be bubonic plague, smallpox and even typhus as various sources say, Athens lost in the battle

of Aegospotami by the Spartan army who a few years later was finally destroyed by the forces of the father of Alexander the Great, the lame Filippo II who finally designed the foundations of the Panhellenic dream that Aristotle proposed so much in his various writings and teachings.

"As soon as the good season began, the Peloponnesians and their allies invaded Attica...and when they had not been there for many days, the famous epidemic began to spread among the Athenians for the first time, which is said to have already occurred in Attica before. many places ... although such a great epidemic and annihilation of men as this was not remembered to have taken place anywhere" (Tuc. II, 47).

"Because the city, as you see, is too troubled and is not even able to raise its head above the deadly waves of the seas, it is consumed in the stems that produce the fruits of the earth, it is consumed in the manacles of grazing oxen and in the infertile births of women. A god, bearer of fire, has launched himself upon us and torments the city, the plague, the worst of enemies, because of him the house of Cadmos is running empty" (Saf. Oedipus Rex, 22-29).

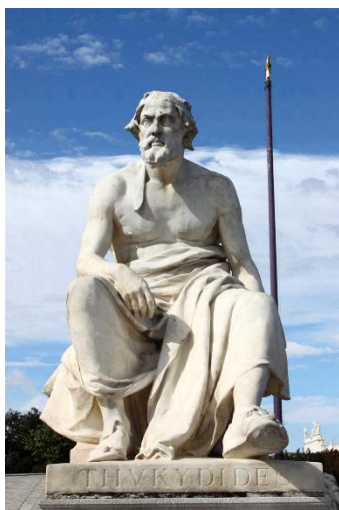


Figure 3: Thucydides Statue Statue of the Greek philosopher Thucydides was carved by Theophilus Hansen (1813-1891) in front of the Austrian Parliament. 'The Plague of Athens' Funeral of Pericles (429 BC)



Figure 4: Peter Bruegel the Death Triumph. Prado Museum, since 1562. ORONoz / ALBUM

The Black Death or Black Past heir to the crusades and the discovery of the Silk Road

The plague, according to the Arab author Ibn al-Wardi, may have originated in the "Country of Darkness", the khanate of the Golden Horde, developed between 1346 and 1353 and it is estimated that its arrival took place between 75 to 200 million lives which forever changed the fate and way of life from the Middle Ages to the age of the Renaissance and subsequent Humanism.

The discovery of trade routes to the Middle East and the idea that the Garden of Eden was in India, led the first Europeans to enter the interior of the Asian continent and come into contact with cultures and ways of life different from those they knew them in their countries of origin that is why they started a series of holy wars justified in religion to recover the holy grail and the holy places where Jesus Christ had lived. The campaign of the crusades had allowed the exit of trade stable and commercial posts located in the Ukraine, which would have led the khanate forces to invade prized areas and will finally cause the entry of cases of infected soldiers, who would have died as a result of this disease, their forces being catapulted inside the walls of Odesa and polluted the English merchants It is something you have to realize that they were infected with the plague and had escaped to their cities of origin, transmitting the bubonic plague to the main Italian commercial cities. The plague devastated the incipient cities first and then it was transmitted to the peasants and residents of the Burgos, generating a high mortality due to the dense

dependence on the sanitary conditions in which the Europeans lived, who lacked adequate sewage networks, latrines, and evacuation routes. of sewage. This generates great mortality in the big cities, generating decreases to half of the population, as in the case of Siana and the area of Tuscany where practically between 50 and 60% of its inhabitants died as a result of the plague, this caused In subsequent decades An increase in the number of peasants eligible for medium-sized dwellings, large fiefdoms lost their owners and allowed the incipient bourgeoisie to settle and occupy the estates and places of former feudal lords developing and allowing dissection anatomy and anatomy founding modern science.

The plague, according to the Arab author Ibn al-Wardi, may have originated in the "Country of Darkness", the khanate of the Golden Horde, developed between 1346 and 1353 and it is estimated that its arrival took place between 75 to 200 million lives which forever changed the fate and way of life from the Middle Ages to the age of the Renaissance and subsequent Humanism.

What can be said or told about this (now leaving the region and returning to the city), except that so much and such was the cruelty of heaven, and, in part, of men, that between the month of May and the following June, due to the virulence of the disease as well as the little diligence that was done about the sick, it is believed and affirmed that within the walls of the city of Florence more than one hundred thousand human creatures were snatched from this present life, a number that, perchance, before that unfortunate accident occurred, was not thought to exist in all of it? Oh, how many great palaces, how many beautiful and well-built houses, how many noble rooms and dwellings, filled and populated with noble dwellers and great lords and ladies, from the greatest to the least servant, were left empty and alone! How many families, how many excellent lineages, how many large and rich inheritances and possessions, how many and how precious riches were seen, without an heir and legitimate successor, abandoned! How many brav and noble men, how many and how beautiful, graceful and gallant ladies, how many gentile and cheerful gentlemen who, not in the opinion of the common people, but that of Galen, Hippocrates, and Aesculapius, would be judged well complexioned and healthy, in the morning they ate with their companions and friends, and at night they dined in the other world, with their ancestors. Boccaccio, G. Decameron. Barcelona: Editorial Planeta, special edition for PENSA, National Journalistic Company; 1999.



Figure 5: A Sicilian mural paint in 1445. In the previous century, the Black Death killed at least a third of Europe's population. Credit: Werner Forman/Universal Images Group/Getty Images.

The Great Mortality in the Plague of Naples: Cholera

Italy: Union, Strength, Freedom! The Risorgimento!

Despite the projects for an urban remodeling of the city, and even though cholera had broken out three times in less than twenty years (in 1855, 1866 and 1873), in September 1884 a new epidemic spread, with extreme violence in the popular neighborhoods, due to congestion and insufficient sewerage network, and also s eading to a lesser extent to the rest of the city.

Italy had a political organization according to which the different republics within it had autonomy and were unable to form a unified state. Italian regions and cities were divided into different kingdoms and duchies, ruled by different monarchies and foreign states. In the south, the Kingdom of the Two Sicilies - made up of Naples and Sicily - was ruled by the bourbon dynasty. The center of Italy, including Rome, the former imperial capital, was dominated by the Pope - the Papal States. While Parma, Modena, Tuscany, Veneto, and Lombardy were ruled by Austrian princes.

Since the 1830s, there were revolutionary groups in Italy that sought to achieve the politItalyunity of their territory. For this, two principals were of special importance: Nationalism, which translated into expelling the Austrians who occupied northern Italy and uniting the Italian provinces; and Constitutionalism, which implied ending monarchical absolutism.

Giuseppe Mazzini organized the secret society called "Young Italy", from where he advocates unity under a nationalist government. Mazzini's effort failed. Years later, the king of Piedmont-Sardinia, Victor Emmanuel II (1820-1878), initiated the long-awaited unity. For this, he had the collaboration of his Prime Minister, Camilo Benso, better known as Count of Cavour (1810-1861). In 1848 the Events in Naples led to the establishment of a constitutional monarchy, and the flight of the Pope. Lombardy-Veneto against the Austrians. Constitutional Monarchy in Piedmont.

The battles of Solferino and the Magenta fields over the pro-Napoleonic Austrian and absolutist troops, meant Italian unification and independence, finally causing the definitive expulsion of the Austrians, but with the respective losses of human lives and the pauperization of the quality of life and the plagues that devastated the rest of the Italian regions during the 19th century.

During all these years of witnessing the duel between life and death, I have gotten to know both combatants better. At first, when I saw death at work in the hospital wards, it was a simple fight between two, a children's game, compared to what I saw later. In Naples, I have seen her kill more than a thousand people a day before my very eyes. In Messina, I saw her bury, in a single minute, more than a hundred thousand men, women, and children, under the sinking houses. Later in Verdun, I saw her, her arms bloodied up to the elbows, with four hundred thousand men and reaping the flower of an entire army on the plains of Flanders and the Somme. It was only by seeing her operate on such a vast scale that I began to understand something of his war tactic. Munthe, Axel, The History of the abbey of San Michele, Ed. Youth, Provence, 101.Barcelona; 1972.

In 1834, Giuseppe Garibaldi became part of Mazzini's Young Italy movement, rising to the category of leader and earning the stripes of captain in the Piedmont Navy.



Figure 6: Triumphant entry Giuseppe Garibaldi to Nápoles, 1860, The one thousand expeditions. EDR archives / Alamy Foto de stock

Garibaldi enters Napoli

In 1859 he fought in northern Italy against the Austrians. In 1860 he landed in Sicily with the Red Shirts and in a swift campaign expelled the bourbons from the island and from Naples, which he offered to Victor Emmanuel II. He tries to incorporate Venice and Rome, but fails due to opposition from the Piedmontese army itself. In 1866 he conquers Venice; he invades Rome but does not hold his possession against the French imperial army. The last great undertaking of his, was the defense of the French republicans against the Prussians in the war of 1870-1871. During this same period, discoveries were made regarding the mechanisms of transmission and dissemination of cholera, as described by a doctor of the time:

“The malattia, with an incubation period of 1-5 days, manifests itself with sudden and intense diarrhea with scarce always più liquide and colorless, and also with enormous loss of liquid, calcium, and potassium. Follow the vomiting that aggravates the dehydration status. The transmission does verify perchè il vibrione, eliminated with the feci, it is not distrutto, due to the lack of the liquid purification system or the water purification system, because it can arrive there healthy, through the food and drink”. Dino Rabai: La Scintilla del Progresso: Pier Luigi Bretti's life of a vigevanese sindaco dell'ottocento through i verbali del consiglio comunale e altri pubblici documenti. Società storica vigevanese—Collana Library n.7, June 2014.

The importance given to hygiene and decoration and the purification of water in Italy was decisive in controlling the epidemics in Naples and the outbreaks in the towns, avoiding contact between feces and sewage, as made manifest in the poem IL Cólera that recounts the devastating effect of the marshes and pollutants to which Neapolitan citizens are exposed, as well as in the novel by Axel Munthe, history of San Michel, how the plague of cholera claimed the life of 3000 inhabitants in one day.

THE CHOLERA

Mystically in a black cloak wrapped
Do you see that Lord, whose hair is bristling
Hollow are the eyes, and iron-yellow the face,
Mocking Doctors and Medicines?
He was removed from the eastern Maremma
In order to bring massacres and ruin to the world;
Now free and loose from native stocks
The Villages and the Reine Cities are very popular.
In palaces and hovels, he penetrates
And in vain the rich man with trembling man
From him, life at the price of gold impedes. Civic library, P.C. December 28, 13.7.1884, p. 111

The smallpox pandemic in the world and the situation in Chile

The beginning of the history of immunizations dates back to the Indian and Chinese civilizations. Records from around the 7th century AD have been found, which show that Buddhist monks would have ingested snake venom in order to generate immunoglobulins and thus neutralize the toxins of snake venom. In parallel, the Chinese would have used pustules and scabs from people infected with smallpox to administer them through cuts in the skin of the forearm of healthy people, with the aim of preventing them from contracting smallpox or developing attenuated forms of the disease. Later, it was Edwar Jenner who is credited with the first modern variolation technique using the term vaccinate by inoculation.

Later, in 1765, the friar Pedro Manuel Chaparro was the first to inoculate smallpox pus within Chilean territory, being one of the pioneers of inoculation in Chile. (31) However, the first smallpox vaccines were sent to Chile, only in 1805, by Rafael de Sobremont, Viceroy of La Plata. There was a great social rejection by the Chilean population to the inoculation of this vaccine, in this context the Catholic Church played a key and active role in spreading the acceptance of the vaccine and the loss of fear of it. (31).

Around the year 1885, while in the Northern Hemisphere the vaccine developed by Louis Pasteur against rabies had become a great success, in Chile, there was still discussion about how vaccination campaigns should be implemented, since our country suffered several smallpox epidemics and there were more vulnerable human groups, which presented epidemic outbreaks of typhoid fever, cholera and chavalongo, due to the scarce and very poor sanitary conditions in which they lived. In this sense, in 1887, the then president, Mr. José Manuel Balmaceda, enacted the Compulsory Vaccine Law and the General Health Ordinance, being the first universal and compulsory vaccination project in Chile, thus establishing a General Health Board destined to advise the government in these matters, however, it should be noted that this project had numerous opponents ranging from prominent intellectuals to liberal parliamentarians, who considered that vaccination was an attack on individual freedoms, in addition to being a failure (5).

Then, in 1892, the Institute of Hygiene was founded by Jorge Montt Álvarez, President of the Republic and the Government Board at that time, the establishment functioned between 1892 and 1924. (32)

At the same time, Chile is one of the forerunners of the bases and foundations of public health in the American Continent, due to the creation of a vast network of chemistry and bacteriology laboratories, disinfection offices, serum therapy pavilion, and serum section and vaccines, with anti-rabies vaccination services and preparation of anti-diphtheria serum, this allowed Chile to establish itself as a model for the other countries of the continent. (33).

The 20th century was fruitful years in the scientific field in Chile. Between the years 1943-1944, a group of outstanding researchers from the Bacteriological Institute with the support of the United Nations managed to establish one of the industrial production plants for penicillin, which meant great advances for public health in the country. (9). In 1954, doctors Eduardo Fuenzalida Loyola and Raúl Palacios von Helms presented the same anti-rabies vaccine that is widely used today. (9) Later, in 1978, the National

Immunization Program was created at the national level, based on the Expanded Program on Immunization (1974) proposed by the World Health Organization (WHO) and the Pan American Health Organization (PAHO) (10).

Later, in 1979, the Bacteriological Institute of Chile was legally succeeded by the Chilean Institute of Public Health (ISP), a regulatory and supervisory institution dedicated to quality control of medicines and medical supplies used in the country and to encouraging research through consultancies and inspections. In this aspect, the production of medical supplies went into the background, even leading to various controversies, due to what it means to be a regulator and qualifier of quality standards of the products created by the same institution, consequently causing the abandonment in the production of sera, vaccines and medicines by the ISP. (eleven).

Currently, in the context of the SARS COV-2 pandemic, whose arrival in Chile was confirmed on March 3, 2020, there was an accelerated development of science, since, in record times, various vaccines were created, tested and approved. that mitigate the symptoms of coronavirus. The first shipment of these vaccines arrived in Chile on December 24, 2020, thanks to the proactive management of the government in power. In this way, Chile positioned itself as the country with one of the fastest vaccination campaigns in Latin America, and the world.



Figure 7: The Chilean doctor Ramón Allende (1845-1884) pointed out in 1876 that, before the existence of the vaccine, this disease "carried away a quarter of the human species. It kills a sixth or eighth of those it attacks, and in cases of epidemic up to a third part" (Smallpox: the vaccine: notes, p. 10).

Malaria: Legacy of the Pacific War, a result of poor sanitation conditions.

In Chile, malaria has been restricted since ancient times to the Province of Tarapacá, located in the far north of the country, a region with desert characteristics, a territory that was under the control of the

Chilean Government after the Battle of Arica on June 7, 1880. in the context of the Pacific War. In this way, the desert opened up a new field of geographical problems and challenges for Chileans.

Arica, a city in the Province of Tarapacá, is located between the mouths of the Lluta and Azapa rivers. In the summer months, the flow of these rivers increases, which favors the formation of slopes and urban swamps that predispose the settlement of the mosquito of the Anopheles genus, the main vector of malaria. Around the year 1910, Arica had precarious water supply conditions, which consisted of wells whose supply came from underground contributions from the river, most of the houses had private wells, whose cleaning was carried out irregularly, and only eight public wells, were outdoors and dirty. For this same year, 790 cases of malaria patients were reported in Chile, which was distributed in 49 hospitals in Chile, serving approximately 70% of patients in the San Juan de Dios Hospital in Arica, it is relevant to mention that that the hospital had a significant deficit of health personnel, who had to attend to the large Arica population and its surroundings. In addition, the infrastructure and equipment of the Hospital was precarious about the large population that it had to serve.

Table no 3: Outbreaks in San Juan de Dios de Arica Hospital (1908-1921)

Year	Outpatients
1908	882
1909	1717
1910	1554
1911	2391
1917	2352*
1918	2823*
1919	3215*
1920	3166*
1921	1535
1922	1697
1923	1754
1924	1662
1925	2225
1926	2418
1927	2601
1928	2342
1929	2463

**In Chile, malaria has been restricted since ancient times to the Province of Tarapacá, located in the far north of the country, a region with desert characteristics, a territory that was under the control of the*

Chilean Government after the Battle of Arica on June 7, 1880. in the context of the Pacific War. In this way, the desert opened up a new field of geographical problems and challenges for Chileans.

The figure includes patients at the San Ramón de Tacna Hospital. Based on data published by the statistical yearbooks for the years indicated.

In 1913, the Italian doctor Giovanni Noé Crevani, a year after he arrived in Chile, addressed the study of Malaria in the northern part of the country, particularly in Arica. Dr. Noé, committed to the country, directs his studies to face the serious health problem caused by Malaria and was one of the first to emphatically make harsh criticism about the indifference and bureaucratic disinterest of high authorities, legal resources, economic and human resources necessary to confront this Epidemic.

"If the money had not been lacking, at this time, surely the authorities would have helped the owners of the 'Chimbas' to carry out the essential hydraulic hygiene works...; the Hospital would have a Laboratory for microscopic examinations...; the fight against malaria would have been organized from its prophylaxis to the cure of chronic malarial patients (which is) the generator of so many subsequent diseases up to the physical and intellectual degeneration of the race". El Ferrocarril newspaper dated 03/04/1913, Dr. Giovanni Noé Crevani

Committed to the country, Dr. Noé Crevani carried out an anti-malaria campaign, directed by himself on the ground. The campaign had two main objectives: the extinction of larval anopheles and the cure of chronic malaria. To achieve the first objective, various measures were adopted that sought to eliminate those areas conducive to the proliferation of the mosquito, river sanitary squads were created, and collector channels were built for water from springs or spillage from ditches, among others, in this way with the work carried out considerably decreased anophelesism. On the other hand, to achieve the second objective, health police squads were organized, which were distributed to various localities in the Tarapacá area, where they carried out cures at home and also went to public schools. The campaign achieved full success in 1945, after 32 years of intense work and study. The broad and accurate vision of Dr. Noé was key to the eradication of the country, thus rendering an invaluable service to his adoptive country.

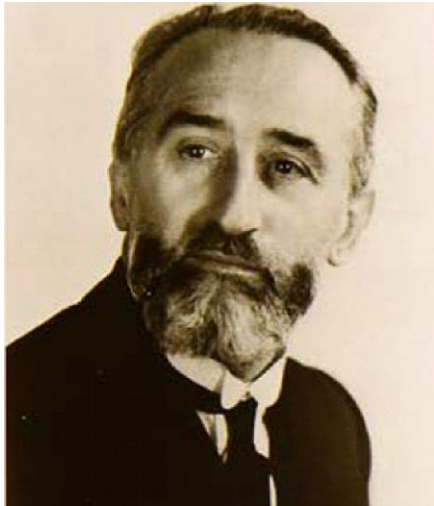


Figure 8: Italian Physician Giovanni Noé Crevani. Corp. Recalcine Photograph Achievement.

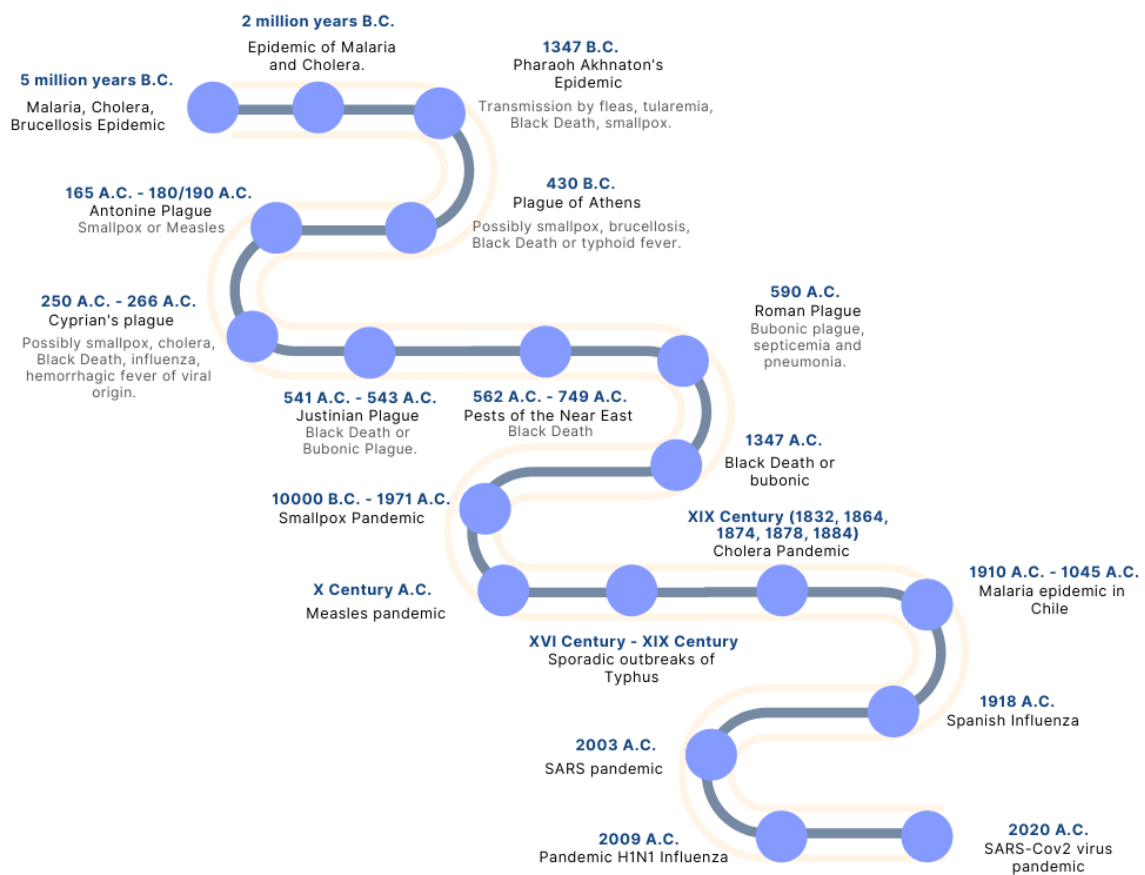


Figure 9: A timeline the History of Pandemics and Epidemics in Humanity. BC: Before Christ; AC: After Christ.

Table no 4: Summary of principal Pandemics and Epidemics in History of Humanity and their consequences

Pandemic Historical Milestone	Start of the Pandemic	Measure took to control the Pandemic	Finished pandemic	Consequences	References
The Plague of Egypt during the rule of Akhenaten	1337-1334-300 km north of Cairo, Egypt. Akhenaten's government. Possible transmission by fleas and ticks among the 80,000 Malaria-infected builders of the new capital city of the empire.	The lepers, the infected and any stonecutter who was infected were isolated. Once they died, they were quickly buried and covered with lime in multiple graves. The priests and doctors performed rites and invocations to their gods with medicinal herbs and ointments to relieve the pain of the sick.	The spread of the epidemic to other cities led to the massive death of all the workers in the Amarna quarries, which probably generated an endemic disease in the territory itself. It was the same deaths that limited the growth of the epidemic that became a pandemic when it spread to Cyprus, Crete, Canaan region, and the Hittite Middle East empire.	Possible fall of Tutankhamun's reign and the end of the Middle Kingdom, social changes in the Hittite empire of its rulers and political, social, and economic instability that was accelerated by the wars against the Egyptians.	5,6,7,8
Athens Plague	Possibly in Ethiopia, according to Thucydides, he	The sick was isolated, the doctors who treated the	It is estimated that between 70,000 and 100,000 people	The impact of the disease was far greater than it would have	2,3,9

	<p>refers that the Ethiopian slaves brought in a ship to the port of Piraeus spread the epidemic among the merchants of the port and from there it spread to Corinth and the other cities allied with Athens.</p>	<p>sick died early and those who survived generated immunity, The infected were thus totally neglected, their family and friends avoided contact for fear of becoming infected, and the few charitable souls who came to their aid they end up falling victim to the disease, thereby contributing to its greater and more rapid spread throughout the city.</p>	<p>died during the two waves of the epidemic that occurred in 430 and 427 BC. The military power of Athens was greatly diminished, to the point that the army was unable to carry out major operations for fifteen years. Although the Athenians achieved some victories against Sparta, the loss of so many sailors and soldiers made it impossible for them to hold on and they surrendered in 404 BC. after the defeat of the Aegospotami.</p>	<p>been in times of peace, for the city was crowded with peasants who had moved to the polis in search of refuge and who became its main victims. The temples and camps in which these exiles settled were soon filled with the dead, left by the state to rot, and this changed the hierarchical structure of Athens and gave rise to the so-called tyrannical or puppet governments set up by the Lacedaemonians in Athens, which lasted 30 years and eventually led to the fall of Athens and later of Sparta to the Macedonians.</p>	
<p>The Black Death in Europe</p>	<p>According to Ibn al-Wardi, it may have originated in the "Country of</p>	<p>Close contacts are isolated, doctors use special suits to avoid</p>	<p>Given that there is no clear record of deaths from the Plague</p>	<p>It is estimated that their arrival took between 75 to 200 million lives and</p>	<p>10,11,12</p>

	<p>Darkness", the khanate of the Golden Horde, which developed between the years 1346 to 1353. The pandemic originated in Central Asia or East Asia but its first definitive appearance was in Caffa in Crimea in 1347. From Kaffa, it was most likely carried by fleas living on black rats traveling on Genoese ships, spreading throughout the basin the Mediterranean and reaching Africa., western Asia and the rest of Europe through Constantinople, Sicily and the Italian peninsula in the time of Crousaders.</p>	<p>contact with patients with long noses with medicinal herbs that are burned inside. People migrate to the countryside to avoid contact with big cities; however, they disperse the contagion. Social gatherings are reduced and bodies are quickly buried or cremated in ossuaries.</p>	<p>pandemic, which date back to values between 7 and 70 million people, the epidemic ceased due to death itself and the shortage of people to reach the effective R0 and was expanding to other cities or more populated areas sprouting in waves in London, Paris, southern Spain, Portugal, and cities in the Middle East, it only stopped once the quarantines were done well.</p>	<p>changed forever the destiny and way of life from the Middle Ages to the Renaissance age and later Humanism, changing feudal society to a mercantile society where the commoner could own land and the bourgeois replaced the feudal lord, the beginnings of capitalism and the foundations of modern society were born from medieval times.</p>	
Smallpox	The origin of	The first	In 1958, the	Between the	13, 14, 15, 16, 17,

pandemic	<p>smallpox is lost in prehistory. It is thought to have appeared around 10,000 BC, at the time of the first agricultural settlements in northeast Africa, and is subsequently thought to have spread to India via ancient Egyptian traders. The earliest evidence of smallpox-like skin lesions is found on the faces of mummies from the time of the 18th and 20th Egyptian dynasties. At the same time, smallpox was reported in 1122 BC in China and is mentioned in ancient Sanskrit texts from India. Smallpox was introduced into</p>	<p>methods of smallpox control that are recorded in ancient Egypt are associated with the use of medicinal herbs. It was common knowledge that smallpox survivors became immune to the disease. Already in the year 430 a. C., smallpox survivors were called to care for the afflicted (9). The man had been trying for a long time to find a cure for the "speckled monster". During medieval times, many herbal remedies, as well as cold treatments and special</p>	<p>Soviet Union proposed to the WHO a global campaign to eradicate the disease and from 1967 efforts were intensified to eliminate smallpox with massive vaccination campaigns, until officially certifying its end in 1980.</p>	<p>fifteenth and twentieth centuries with the arrival of the Spanish conquerors in Mesoamerica and South America the pandemic also led to the collapse of pre-Columbian Mesoamerican civilizations, along with the fall of the Inca empire and the Chancay, Chimu, Patagonian and Polynesian indigenous cultures. In the twentieth century, it was the first viral pandemic to be eradicated thanks to the combined efforts of the United Nations, the USSR and third world countries that adhered to mass vaccination against smallpox. The</p>	18, 19,20
----------	--	---	--	--	-----------

	<p>Europe sometime between the 5th and 7th centuries and was a frequent epidemic during the Middle Ages. The early stages of the decline of the Roman Empire coincided with a major epidemic: the Antonian plague, which killed nearly 7 million people.</p>	<p>cloths, were used to prevent or treat smallpox. Dr. Sydenham (1624–1689) treated his patients by not allowing a fire in the room, leaving the windows permanently open, placing the sheets no higher than the patient's waist, and administering "twelve bottles of small beer each." twenty-four hours" (10).</p>		<p>smallpox pandemic claimed many lives; it is estimated that in the 20th century alone, smallpox killed up to 300 million people and 500 million in its last 100 years of existence.</p>	
<p>The great cholera epidemic in Naples</p>	<p>A guide to the content of the dossier "1885, Cholera in Naples"</p> <p>In a hot summer at the end of the 19th century, cases of cholera began to be reported in</p>	<p>The appalling levels of mortality provoke a national debate, which will result, among other things, in the special law for the rehabilitation of Naples, in</p>	<p>A government intervention was designed to definitively solve the old ills of the city. Agostino Depretis, President of the Council, then solemnly declared that it was necessary</p>	<p>When cholera broke out in Naples in 1911, the civic government-commissioned Giuseppe Moscati to conduct public health inspections and to investigate both the origins</p>	<p>21,22,23,36</p>

	<p>Mediterranean ports. As a medical text says, "The disease, after an incubation period of 1 to 5 days, manifests itself with sudden and intense diarrhea with increasingly liquid and colorless secretions, and therefore with enormous losses of fluids, calcium and potassium. Vomiting follows, aggravating the state of dehydration. The transmission occurs because the vibrio, eliminated with the feces, is not destroyed, due to deficiencies in the wastewater treatment system or water</p>	<p>the relative master plan of the city, and later in the national extension of some measures, considered useful for Intervene in cases of severe urban sanitation conditions, such as the construction of bridges, dams, sewers, sewage collection systems and houses under horizontal construction</p>	<p>to "sventrare Napoli" (literally, "to gut Naples"), thus coining the neologism sventramento (inspired by the reading of "Il Ventre di Napoli" by Matilde Serao) which means "demolition" and was applied from that moment to the main urban remodeling operations;² and was later extended to all similar urban interventions carried out in Italy in these years.</p> <p>On the occasion of the visit of King Umberto I to the citizens affected by the disease, there was talk of the remodeling of popular neighborhoods. The main</p>	<p>of the disease and the best ways to eradicate it. This he promptly did, presenting his suggestions to city officials. To his satisfaction, most of these ideas were put into practice by the time of his death.</p>	
--	---	--	---	--	--

	<p>purification, so that it can reach healthy humans through food and drinks.</p> <p>A few weeks after the first reports, the outbreak of the epidemic in some popular neighborhoods of Naples, where not only are the "water purification and purification" systems very primitive, if not non-existent, but where the general urban conditions border on the Impossible: dwellings that from ground level climb up stairways and tunnels, to build environments often devoid of direct light and air, and with a population density that in</p>		<p>supporters were the foreign minister Pasquale Stanislao Mancini, the mayor Nicola Amore and Agostino Depretis, the strongest advocate of a radical demolition of the areas most affected by the epidemic.</p> <p>It was then that the main interventions to be carried out were outlined, among them the creation of an efficient sewage system, obtaining an abundant supply of water, the remodeling of popular neighborhoods (which would be obtained with a main</p>		
--	---	--	---	--	--

	<p>some parts of the Porto area reaches 2,600 inhabitants per hectare. To this is also added the socioeconomic system, with an "alley economy" within which are the residence, the productive activities, including the micro-industrial ones with the use of toxic substances, the trade including food and the wholesale trade with a confusing system warehouse and the like. supply and distribution network.</p>		<p>street from the Central Station to the center of the city and a smaller road network that would favor the circulation of the sea breeze inland) and the creation of an expanding neighborhood to the north of the city.</p>		
<p>The Spanish Flu</p>	<p>From 1918 after World War I, influenza A associated</p>	<p>Schools and universities were closed, new hospitals</p>	<p>It is estimated that at the end of 1918, after the great</p>	<p>The fall of the population in the countries that were</p>	<p>24, 25,26,27,28,29</p>

	<p>with the H1 N1 strain of influenza likely began in the southeast of the East China city, which resulted in the deaths of 100 million people according to various sources which was first notified time in Spain being that the other powers are probably from France, those llamas at the time of those who came to work in Spain brought the plague and spread it causing the greatest mortality existing until the 20th century</p>	<p>were built, the use of masks and glasses as well as gloves became mandatory. Mass quarantines were made and medical students were called to replace deceased medical personnel.</p>	<p>mortality that occurred during this year, the slowdown and decrease in incidence and mortality in the countries that were affected, either due to the reduction in the contagion rate and the R0 necessary for the epidemic to continue expanding, taking around 100 million people.</p>	<p>involved in the First World War and in the nations that supported them provoked a behavioural change in the years to come, initiating the so-called Roaring Twenties, added to the restrictions taken at the Versailles Treaty Conference to restrict and demilitarise Germany, was the breeding ground for the emergence of nationalism and fascist movements throughout Europe and North America, generating disapproval and a fall in the economic activities of the countries that formed the Triple Entente and the Triple Alliance. It is</p>	
--	--	--	---	--	--

				estimated that every 50 years a new variant of influenza appears that does not generate immunity in the population due to mutations that are not recognized, as in the case of the epidemics in Hong Kong and the avian and swine flu epidemics in China in 2009.	
The malaria epidemic in Arica Chile	In Chile, malaria was restricted to the Province of Tarapacá, located in the extreme north of the country, a region with desert characteristics, a territory that was under the control of the Chilean Government after the Battle of Arica on June 7, 1880 in the context of the	Dr. Noé Crevani carried out an antimalarial campaign that had two main objectives: the extinction of larval anophelesism and the cure of chronic malaria. To achieve the first objective, various measures were adopted	The campaign achieved full success in 1945, after 32 years of intense work and study. The broad and accurate vision of Dr. Noé was key to the eradication of the country, thus rendering an invaluable service to his adoptive country.	Sanitary squads were created and the control of endemic malaria in the north of our country allowed the annexation and stabilization of the social and sanitary situation, which was unfinished and poorly controlled by the authorities of the time. It was the sanitary hero who succeeded and	30,31,32,33,34,35, 36.

	Pacific War.	that sought to eliminate those areas conducive to the proliferation of the mosquito, river sanitary squads were created, collector channels were built for water from springs or spillage from ditches. On the other hand, to achieve the second objective, health police squads were organized, which were distributed to various localities in the Tarapacá area, where they carried out cures at home and also went to public schools.		allowed the citizens of northern Chile to settle definitively and become the main producer and extractor of raw materials in the country.	
--	--------------	---	--	---	--

Conclusions

The World Trade Organization (WTO), together with the World Health Organization (WHO), posed the following question in the 1970s: What does the population's health status levels depend on? For this, they defined the state of the Population's Health, through four factors which are the organization of the socioeconomic system, organization of health systems, GEOGRAPHICAL, ENVIRONMENTAL, GENETIC FACTORS. (37).

A good example of this can be seen in the measures that Chile-Italy had to take in the face of their epidemics between the 19th and 20th centuries, in order to jump to the development currently proposed by the Western capitalist world. Within the socioeconomic factors, we can find Chile, a feudal-type society that bases its wealth on the exploitation of the countryside and the latifundia, who fought for independence against the Spanish monarchist forces, while in Italy, a state fragmented by the monarchical forces of Austrian and Napoleonic origin, struggled to achieve the dreamed unity. It was the poet, writer and politician Giuseppe Mazzini in 1823, who created fertile ground for Italian independence ideas, which caused a war between the ideas of the Italian Freemason republicans, the Carbonieri and the Austrian and Napoleonic absolutist monarchists.

This caused successive epidemics and epidemic outbreaks that have affected several European nations. Italy was one of the most affected, where cholera was king, especially in the South. While the leader and father of the Chilean nation José Miguel Carrera, together with Bernardo O'Higgins disputed power between themselves and the royalist forces headed by Casimiro Marcot del Pont and representatives of the Royal Court, the first health interventions were carried out with the first vaccinations in national territory in 1811, given the poor hygienic conditions, the sieges and the movement of troops and soldiers that caused epidemic outbreaks and famines in the cities of Santiago and Concepción. Both independence processes respond to socioeconomic, political and socio-sanitary phenomena, they are determined by the geographic, environmental and genetic variables of the populations, caused by inequalities and inequities in the distribution of wealth and access to health services, as is the case of the successive outbreaks of cholera in Italy and Malaria in northern Chile, due to the wars of the risorgimento in the case of Italy and the War of the Pacific in the case of Chile, which accentuated overcrowding, and the critical rate of contagion and minimal individuals to start an epidemic, both being swampy areas in the Loa and Lluta Rivers in Chile, while in Italy the Volturno River suffered from the arrival of sewage caused by factories and poorly ventilated and precarious vertical constructions. little neat. All these factors interacted causing successive epidemics in various historical periods and it was not but a bearing of Italian doctor Juan Noé Crevanni together with the teacher of him the Dott. Bautista Grassi who were able to solve both the epidemics that devastated both Chile and Italy during the present centuries. (38,39,40,41,42).

The WHO health for all year 2000, funded by pharmaceutical companies, stated that all patients should be seen by doctors. The level of health status depends on the socioeconomic organization of health. The accumulation of quantity produces a jump in quality, as in the transformation of ice, into water and then into steam; that is, the generation of a critical mass of health systems, as is the case of Chile and Cuba, between the years 1925 and 1973, which led to an increase in coverage, and a leap in quality, in the when

the coverage occurred, given that this transformation process would lead to the creation of the necessary specialists for the generation of referral and counter-referral systems that would cover the health needs of the population.(43,44,45).

So, what are the big lessons we need to learn from the past to deal with the current covid 19 pandemic? The case of Chile had to be adapted by generating educational strategies with the development of telemedicine, online anatomy lessons with live dissections, home delivery of suture packages, and online assisted surgical technique with previously recorded lessons, all based on simulation hi-fi clinic proposed by Finisterrae University. (46).

It would be advisable to create a world virological center that studies and controls in a coordinated manner, especially in countries with lower per capita income, such as third world countries where there is a greater risk of the appearance of new variants and other viral forms. , in order to isolate and cut the chain of transmission of biological forms, bproviding sufficient information to be able to predict and take measures before the start of the epidemic and after the pandemic, designating an external epidemiological control committee (archon polemarca) to stop the expansion and spread of the biological agent when it enters the affected country or nation, generating a traceability and isolation strategy that allows the complete closure of cities and urban sectors; In addition to the formation of an epidemiological internal security committee (archon basileo) which has the task of generating favorable conditions to be able to quarantine through the delivery of vouchers and food boxes for 21 days, avoiding generating the critical points necessary for a outbreak, then an epidemic and then a pandemic, receiving information from the regional committees and using it to develop adequate prevention.

Table no: 5 Comparisons between the Epidemics en Italia y de la Malaria en Chile en el siglo XIX y XX

Characteristics of Pandemic	The great cholera epidemic in Napoles (1864-1912)	Malary`s Epidemy in Arica, Chile. (1888-1952)
Start of the pandemic/epidemic	In a hot summer at the end of the 19th century, cases of cholera began to be reported in Mediterranean ports. As a medical text says, "The disease, after an incubation period of 1 to 5 days, manifests itself with sudden and intense diarrhea with increasingly liquid and colorless secretions, and	In Chile, malaria has been restricted since ancient times to the Province of Tarapacá, located in the far north of the country, a region with desert characteristics, a territory that was under the control of the Chilean Government after the Battle of Arica on June 7, 1880. in the context of the

	<p>therefore with enormous losses of fluids, calcium and potassium. Vomiting follows, aggravating the state of dehydration. The transmission occurs because the vibrio, eliminated with the feces, is not destroyed, due to deficiencies in the wastewater treatment system or water purification, so that it can reach healthy humans through food and drinks.</p>	<p>Pacific War. In this way, the desert opened up a new field of geographical problems and challenges for Chilean scientists.</p>
<p>Measures taken during the pandemic/epidemic</p>	<p>The appalling levels of mortality provoke a national debate, which will result, among other things, in the special law for the rehabilitation of Naples, in the relative master plan of the city, and later in the national extension of some measures, considered useful for Intervene in cases of severe urban sanitation conditions, such as the construction of bridges, dams, sewers, sewage collection systems, and houses under horizontal construction.</p>	<p>Committed to the country, Dr. Noé Crevani carried out an anti-malaria campaign, which he himself directed on the ground. The campaign had two main objectives: the extinction of larval anophelesism and the cure of chronic malaria. To achieve the first objective, various measures were adopted that sought to eliminate those areas conducive to the proliferation of the mosquito, river sanitary squads were created, collector channels were built for water from springs or spillage from ditches, among others, in this way with the work carried out considerably decreased anophelesism. On the other hand, to achieve the second objective, health police squads were organized, which were distributed to various localities in the Tarapacá area, where they carried out cures at home and also went to public schools. The campaign achieved full success in 1945, after 32 years of intense work and study. The broad and accurate vision of Dr. Noé was key to the eradication of the</p>

		country, thus rendering an invaluable service to his adoptive country.
End of the pandemic/epidemic	<p>A government intervention was designed to definitively solve the old ills of the city. Agostino Depretis, President of the Council, then solemnly declared that it was necessary to "sventrare Napoli" (literally, "to gut Naples"), thus coining the neologism sventramento (inspired by the reading of "Il Ventre di Napoli" by Matilde Serao) which means "demolition" and was applied from that moment to the main urban remodeling operations;² and was later extended to all similar urban interventions carried out in Italy in these years.</p>	<p>The campaign achieved full success in 1945, after 32 years of intense work and study. The broad and accurate vision of Dr. Noé was key to the eradication of the country, thus rendering an invaluable service to his adoptive country.</p>
Consequences	<p>It extends to the early 20th century, with the cholera outbreak and epidemic of 1911. When cholera broke out in Naples in 1911, Giuseppe Moscati was commissioned by the civic government to carry out public health inspections and to investigate both the origins of the disease and the best ways to eradicate it. This he did quickly, presenting his suggestions to city officials. Much to his satisfaction, most of these ideas were put into practice at the time of his death.</p>	<p>Sanitary squads were created and the control of endemic malaria in the north of our country made it possible to annex and stabilize the unfinished and poorly controlled socio-sanitary situation by the authorities of the time, being the sanitary hero who achieved and allowed the citizens of the North of Chile settle definitively and become the main producer and extractor of raw materials in the country.</p>

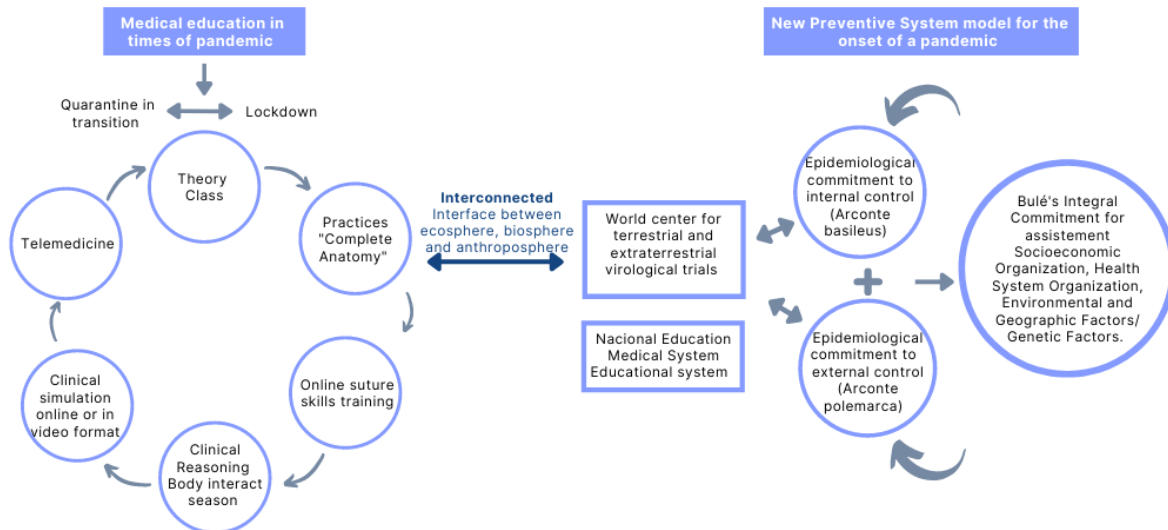


Figure 10: Medical Education and new preventive model proposal to Pandemia

Conflicts of interest

The authors have completed the ICJM conflict of interest declaration form, and declare that they have not received funding for the preparation of this report; not have financial relationships with organizations that could have an interest in the published article, in the last three years; and not have other relationships or activities that could influence the published article, in the last three years; and not have other relationships or activities that could influence the published article. The forms can be requested by connecting to the responsible author, or to the editorial address of the journal.

Financial support

The authors declare that they received no funding for this work.

Protocol Registers

It was not included in this review article in the PROSPERO registry, because our work does not contemplate intervention in humans or animals, but rather a narrative review and analysis of the body of evidence at the time of analyzing primary and secondary sources. from original historical sources.

Acknowledgment

We greetings and regards to the Center for Research in Medical Education and Health Sciences, Finis Terrae University, for the design, preparation and review of this article.

Ethical aspects

This study did not require an ethics committee, as it was an investigation of secondary sources.

Data Access Statement

The authors declare availability for the delivery of databases for those interested.

Bibliography

1. [Rifkin RF, Potgieter M, Ramond JB, Cowan DA. \(2017\). Ancient oncogenesis, infection and human evolution. *Evol Appl.* 10 \(10\):949-964.](#)
2. [Moreno E. \(2014\). Retrospective and prospective perspectives on zoonotic brucellosis. *Front Microbiol.* 5:213. Published 2014.](#)
3. [Oliver G, Pybus MA, Suchard P, Flavien J, Bernardin A, Rambaut FW, et al. \(2012\). Unifying spatial epidemiology and evolution. *Proceedings of the National Academy of Sciences.* 109\(37\):15066–71.](#)
4. [Serrano-Cumplido, P.B. Antón-Eguía Ortega, A. Ruiz García, V. Olmo Quintana, A. Segura Frago, A. Barquilla García, Á. Morán Bayón, COVID-19. La historia se repite y seguimos tropezando con la misma piedra, *Medicina de Familia. SEMERGEN*, Volume 46, Supplement 1, 2020, Pages 48-54.](#)
5. [Habicht ME, Eppenberger PE, Rühli F. \(2021\). A critical assessment of proposed outbreaks of plague and other epidemic diseases in Ancient Egypt. *Int J Infect Dis.* Feb; 103:217-219.](#)
6. Norrie P. A history of disease in ancient times: More lethal than war. Springer; 2016 Jun 25.
7. [Abdel-Aziz, Shadia & Aeron, Abhinav & Kahil, Tarek. \(2016\). Health Benefits and Possible Risks of Herbal Medicine. 10.1007/978-3-319-25277-3 6.](#)
8. [Metwally AM, Ghoneim MM, Eissa IH, Elsehemy IA, Mostafa AE, Hegazy MM, Afifi WM, Dou D. \(2021\). Traditional ancient Egyptian medicine: A review. *Saudi J Biol Sci.* Oct;28 \(10\): 5823-5832.](#)
9. [Lull J. Historia National Geographic \[Internet\]. Historia National Geographic. \(2021\). \[citado el 6 de marzo de 2022\]. Disponible.](#)
10. [Cervera F. La peste, la epidemia que asoló Atenas en plena guerra \[Internet\]. Historia National Geographic. 2021 \[citado el 6 de marzo de 2022\]. Disponible en:](#)
11. [Ponti, Giovanni; d'Onofrio, Felice; Ruini, Cristel; Muscatello, Umberto; Tomasi, Aldo \(2015\). "Giuseppe Moscati: A Man, A Physician and a Scientist". *Amha - Acta Medico-Historica Adriatica.* 13 \(1\): 171–180. PMID 26203546.](#)
12. [Glatter KA, Finkelman P. \(2021\). History of the Plague: An Ancient Pandemic for the Age of COVID-19. *Am J Med.* 134 \(2\):176-181.](#)

13. [Rubini M, Gualdi-Russo E, Manzon VS, Rinaldo N, Bianucci R. \(2016\). Mortality risk factors show similar trends in modern and historic populations exposed to plague. J Infect Dev Ctries. May 31;10\(5\):488-93.](#)
14. [Riedel S. \(2005\). Edward Jenner and the history of smallpox and vaccination. Proc \(Bayl Univ Med Cent\).18 \(1\):21-25.](#)
15. [Littman RJ, Littman ML. \(1973\). Galen and the Antonine plague. Am J Philol. 94:243–255.](#)
16. [Christopher GW, Cieslak TJ, Pavlin JA, Eitzen EM., \(1997\). Jr Biological warfare. A historical perspective. JAMA.; 278:412–417.](#)
17. Moore JC. The History of the Smallpox. London: Longman; 1815. [Google Scholar]
18. Gross CP, Sepkowitz KA. (1998). The myth of the medical breakthrough: smallpox, vaccination, and Jenner reconsidered. Int J Infect Dis. 3:54–60.
19. [Henderson, Donald A. \(2011\). The eradication of smallpox--an overview of the past, present, and future. Vaccine. 29 Suppl 4: D7-9.](#)
20. Kruif, P Microbe hunters, then and now (en inglés). Medi-Ed Press. 1996. p. 23. ISBN 978-0-936741-11-6.
21. WHO | Smallpox». 21 de septiembre de 2007. Archivado desde el original el 21 de septiembre de 2007.
22. D'Onofrio F. Joseph Moscati. As seen by a Medical Doctor. Messina: ESUR - Ignatianum, 1991.2.
23. Moscati G. Giuseppe Moscati. Napoli: Giannini, 1927.3. Rossiello R. L'anatomia Patologica di San Giuseppe Moscati. Messina: ESUR, 1992.
24. [Casella M. Il Prof. Giuseppe Moscati \(1880-1927\). \(2016\). Rassegna della sua produzione scientifica \[Prof. Giuseppe Moscati \(1880-1927\). A special issue on his scientific production\]. Acta Med Hist Adriat. Aug;14\(1\):9-40. Italian. PMID: 27598963.](#)
25. [Martini M, Gazzaniga V, Bragazzi NL, Barberis I. \(2019\). The Spanish Influenza Pandemic: a lesson from history 100 years after 1918. J Prev Med Hyg. 60\(1\): E64-E67. Published 2019 Mar 29.](#)
26. Gaeta R, Fornaciari A, Giuffra V. The 1918/19 Spanish Flu in Pisa (Tuscany, Italy): Clinical, Epidemiological and Autoptic Considerations. Acta Med Hist Adriat. 2020 Jun;18(1):47-62.

27. The Prevailing Pandemic of Influenza. JAMA. 2020 Apr 14;323(14):1414-1415.
28. Mossad SB. Influenza update 2018-2019: 100 years after the great pandemic. Cleve Clin J Med. 2018 Nov;85 (11):861-869. doi: 10.3949/ccjm.85a.18095. PMID: 30395523.
29. Økland H, Mamelund SE. (2019). Race and 1918 Influenza Pandemic in the United States: A Review of the Literature. Int J Environ Res Public Health. Jul 12;16(14):2487.
30. Saul T. Gripe española: la primera pandemia global [Internet]. Historia National Geographic. 2018 [citado el 19 de marzo de 2022]. Disponible en:
31. Biblioteca Nacional de Chile. La vacunación en Chile (1805-1923) - Memoria Chilena, Biblioteca Nacional de Chile [Internet]. [cited 2021 Dec 16].
32. The College of Physicians of Philadelphia. Timeline | History of Vaccines [Internet]. [cited 2021 Dec 16].
33. Independencia Patrimonial. Antiguo Instituto de Higiene – Independencia Patrimonial [Internet]. [cited 2021 Dec 16].
34. Reverte Coma JM. INSTITUTO Pasteur de Paris [Internet]. [cited 2021 Dec 16]. <http://www.gorgas.gob.pa/Documentos/museoafc/loscriminales/instituciones/pasteur.html>
35. Patrimonio Ñuñoa. Instituto de Salud Pública (ISP) – Patrimonio Ñuñoa [Internet]. [cited 2021 Dec 16].
36. Diario El Ferrocarril con fecha 04/03/1913, Dr. Giovanni Noé Crevani [Internet]. [cited 2021 Dec 16].
37. Pacini F. Osservazioni microscopiche e deduzioni patologiche sul cholera asiatico. Memoria del dott. Filippo Pacini: letta alla Società medico-fisica di Firenze nella seduta del 10 Dicembre 1854. Firenze: Tip. Federigo Bencini, 1854. Estr da: Gazzetta medica italiana, Toscana. p. 397-405. Biblioteca del Archigimnasio. Disponible.
38. Determinants of health [Internet]. Who.int. [citado el 21 de abril de 2022]. Disponible.
39. Noé, Adriana. Juan Noé. Un testimonio familiar sobre su vida y obra. Ediciones de la Universidad de Chile. Santiago de Chile. 1987.
40. BIBLIOTECA NACIONAL DE CHILE. José Miguel Carrera Verdugo (1785-1821). Memoria Chilena. Disponible en <http://www.memoriachilena.gob.cl/>. Accedido en 21-04-2022.

41. Carrera, José Miguel, 1785-1821. Diario militar del General don J.M. Carrera: 1810-1814. Disponible en Memoria Chilena, Biblioteca Nacional de Chile <http://www.memoriachilena.gob.cl/602/w3-channel.html>
<http://www.memoriachilena.gob.cl/602/w3-article-99227.html>
42. Carrera, José Miguel, 1785-1821. Diario militar del General don J.M. Carrera: 1810-1814. Disponible en Memoria Chilena, Biblioteca Nacional de Chile <http://www.memoriachilena.gob.cl/>. Accedido en 21-04-2022.
43. PARODI REVOREDO, Daniel. VICTORIA O FRACASO: LA GUERRA DEL PACÍFICO Y LA AUTORREPRESENTACIÓN CONTEMPORÁNEA DE CHILE. Diálogo Andino, Arica , n. 57, p. 121-132, dic. 2018. Disponible en <http://www.scielo.cl/scielo.php?script=sci_arttext accedido en 21 abr. 2022. <http://dx.doi.org/>
44. Pan American Health Organization, de la Salud OP. Salud para todos en el año (42) 2000: Plan de acción para la instrumentación de las estrategias regionales. OPS Documento Oficial;(179),1982 [Internet]. 1982 [citado el 21 de abril de 2022]; Disponible en: <https://iris.paho.org/handle/>
45. Morales Ojeda R, Mas Bermejo P, Castell-Florit Serrate P, Arocha Mariño C, Valdivia Onega NC, Druyet Castillo D, et al. Transformaciones en el sistema de salud en Cuba y estrategias actuales para su consolidación y sostenibilidad. Rev Panam Salud Publica. 2018;42: e25. [https://doi.org/HYPERLINK \"https://doi.org/10.26633/](https://doi.org/HYPERLINK \)
46. Goic G Alejandro. El Sistema de Salud de Chile: una tarea pendiente. Rev. méd. Chile [Internet]. 2015 Jun [citado 2022 Abr 21]; 143(6): 774-786. Disponible en: http://www.scielo.cl/scielo.php?script=sci_arttext.
47. Santelices Lucía, Williams Carolina, Dougnac Alberto, Bittner Sandra, Cádiz Marcelo, Vega Ernesto et al. Gestión de una oficina de educación médica: evidencia de 10 años y planteamientos de nuevos desafíos para el siglo XXI. Rev. méd. Chile [Internet]. 2021 Ene [citado 2022 Abr 21]; 149 (1): 119-127. Disponible en: http://www.scielo.cl/scielo.php?script=sci_arttext
48. Leal-Castro AL. [Efecto de las medidas preventivas durante la pandemia: más allá del SARS CoV-2]. Biomedica. 2021 Oct 15;41(Sp. 2):5-7. Spanish. PMID: 34669272; PMCID: PMC8577693.
49. Flavius, Josephus: Against Apion I [Internet]. Uchicago.edu. [citado el 26 de junio de 2022]. Disponible en: <https://penelope.uchicago.edu/josephus/apion-1.html>
50. [How Catherine the Great became Russia's first vaccine tsar. Times \(London, England: 1788\)](#) [Internet]. [citado el 26 de junio de 2022]; Disponible.