

REVIEW ARTICLE

A Critical Review on the Prevalence of Pathogenic Diseases in Humans Over the Past Ten years (2013-2023)

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ABSTRACT

Human beings are prone to many diseases that are either infectious or non-infectious in nature. Infectious diseases occur mainly due to different organisms like viruses, fungi, bacteria or parasites and tend to spread whereas non-infectious diseases do not spread among people. In the last decade (2013-2023) several epidemics have occurred and has resulted in the death of several human beings during this period; which includes the COVID-19 pandemic, Ebola, AIDS, Influenza, Dengue etc. Globally, the major cause of deaths is mainly due to three major reasons: cardiovascular, respiratory and neonatal conditions. Causes of death in humans can be grouped into three major categories: communicable, non-communicable and injuries. Infectious diseases remain a significant public health concern, impacting human populations worldwide. This review paper provides an analysis of infectious diseases in humans during the last decade, with a focus on prevalence, trends, emerging challenges, and advancements in prevention and control strategies. By examining the broad scientific literature, epidemiological data and public health reports, the present review aims to emphasize on the evolution of various infectious diseases and inform strategies to mitigate their impact on human health. The findings highlight the prominence of continued research, early detection and effective preventive measures to ease the effect of these diseases on worldwide health.

Keywords: infectious diseases, last decade, prevalence, trends, prevention, control strategies.

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INTRODUCTION

Numerous diseases, particularly a wide range of contagious diseases, have been discovered in humans throughout past ten years, which spans the years 2013 through 2023. Hundreds of thousands of individuals have died as a result of these diseases worldwide. Vaccines and medications may be able to cure some diseases, but not others. Human health has always been threatened by infectious diseases, which still have an effect on people all over the world. The dynamics and incidence of infectious diseases in human populations have changed significantly during the last ten years due to a variety of causes. All age group people, socioeconomic backgrounds, and geographic regions are impacted by infectious diseases, which continue to be a major source of illness and mortality globally. They cover a wide range of diseases brought on by various pathogens, such as bacteria, fungi, viruses, and parasites. Developing successful public health treatments, enhancing healthcare systems, and lessening the effects of these diseases on human populations all depend on an understanding of their prevalence and patterns. Infectious diseases, both well-known and newly discovered, have drawn attention worldwide throughout the past ten years. Viral illness outbreaks, including the 2009 H1N1 influenza pandemic, the 2014–2016 Ebola virus outbreak, and the COVID-19 pandemic, have had a significant effect on public health systems, economics and the general well-being of society. These incidents have acted as sobering reminders of how susceptible human populations are to new infections and how crucial readiness and reaction plans are. The incidence of other infectious diseases has changed in addition to outbreaks that make headlines. Millions of people worldwide are still affected by respiratory illnesses, such as pneumonia, TB, and influenza. In environments with low resources, diarrheal illnesses—which are spread by tainted food and water—continue to be a leading cause

of morbidity. The geographic distribution of vector-borne illnesses, like dengue fever and malaria, has changed as a result of human migration and environmental changes. Numerous factors, both internal and external to human populations, affect the prevalence of infectious diseases. The dynamics and patterns of disease transmission are shaped by the complex interactions of factors like population expansion, urbanization, climate change, international travel, antibiotic resistance, and socioeconomic inequality. Furthermore, the fight against infectious diseases and the improvement of patient outcomes have been greatly aided by developments in diagnostic tools, treatment alternatives, and preventative measures. A thorough examination of the last ten years' worth of public health reports, epidemiological data, and scientific literature has been done in order to perform this evaluation. The goal will be to document the worldwide spread of infectious diseases in people, taking into account geographical variances and the unique difficulties that various communities experience. Disease prevalence, new infections, shifting trends, and the efficacy of therapies used over this time will all be covered in the review. In the end, this review's conclusions will advance our knowledge of the incidence and consequences of contagious diseases in people during the past ten years. In order to lessen the load of infectious illnesses and advance global well-being security in the future, this study attempts to educate public health policies, policy decisions, and research goals by examining the trends and highlighting important opportunities and challenges. The diseases have been arranged in this review paper based on how common each disease is worldwide, which is as follows:

1.COVID-19

Causative Agent- *SARS Cov-2 Virus*

Duration of Prevalence- 2019- present

The SARS-CoV-2 (Severe Acute Respiratory Syndrome CoronaVirus -2) is causative agent of COVID-19. It is commonly referred to as the coronavirus disease 2019 and in December 2019, it was initially discovered in Wuhan, China.

Since 2019 several variants of this virus have occurred making it hard to track and find a total cure. These variants are as follows:

1. **Alpha Variant (B.1.1.7):** In late 2020, this variant was initially discovered in UK and was considered to be more contagious than the original strain. It is distinguished by many changes in the virus's spike protein. The Alpha variant has proliferated in numerous nations across the globe.
2. **Beta Variant (B.1.351):** The Beta variant, which was first identified in South Africa towards the end of 2020, also possesses mutations in the spike protein. It might be more contagious and could affect how well vaccines work.
3. **Gamma Variant (P.1):** In late 2020, this variation was discovered for the first time in Brazil. It may be resistant to neutralizing antibodies and shares several alterations with the Beta variant.
4. **Delta Variant (B.1.617.2):** Since its first discovery in India, the Delta variant has swiftly taken over as the predominant strain in other nations. It is quite contagious. Numerous mutations in the Delta variety may improve its capacity to spread infection and elude immunological reactions. [1]
5. **Omicron (B.1.1.529):** In late 2021, the Omicron variant was initially discovered in South Africa and Botswana. Its spike protein has several alterations that facilitate the virus's entrance into human cells. [2]

Symptoms- The most common symptoms of COVID-19 includes:

1. **Fever:** A body temperature that is greater than normal, typically 38°C or higher.
2. **Cough:** A productive or dry cough which is frequently persistent and occasionally accompanied by sore throat.
3. **Shortness of breath:** Breathing difficulties or a feeling of being out of breath.
4. **Fatigue:** Experiencing a lack of energy or fatigue.
5. **Muscle or body aches:** Pervasive discomfort or pain in the muscles.
6. **Headache:** A severe headache that lasts for a long time and varies in strength.
7. **Loss of taste or smell:** Alterations in these senses, such as ageusia (loss of taste) and anosmia (loss of smell).
8. **Sore throat :** An irritation or soreness in the throat that frequently makes swallowing difficult.
9. **Congestion or runny nose:** This condition is similar to the typical cold.
10. **Gastrointestinal symptoms :** Some people may have diarrhea, vomiting, or nausea. [3]

Treatment- The treatment for COVID-19 includes:

1. **Symptom Management:** Rest, fluids, and over-the-counter drugs could help in managing mild cases of COVID-19 by reducing fever, coughing, and body pains.
2. **Hospital Care:** People with severe COVID-19 symptoms may require hospitalization.

3. **Oxygen Therapy:** When oxygen levels are low, more oxygen can be given via a face mask, nasal prongs, or, in more extreme situations, mechanical ventilation with a ventilator.
4. **Medications:** In certain situations, a number of immune-based treatments and antiviral drugs have been approved or permitted for use in emergency situations. In some situations, these drugs—like remdesivir and monoclonal antibodies—may be administered to lessen the severity of the disease.
5. **Corticosteroids:** Corticosteroids, such as dexamethasone, can assist lower inflammation and enhance results in more severe COVID-19 instances with respiratory distress conditions.
6. **Supportive Care:** Adequate diet, intravenous fluids, and organ function monitoring may be necessary for patients with severe COVID-19.
7. **Vaccination:** Many nations have produced and approved COVID-19 vaccinations for use in emergency situations. In order to avoid serious sickness, hospitalization, and death, vaccination is essential. [4]

Statistics: According to the WHO, there have been 768,187,096 confirmed cases of COVID-19 to date, including 6,945,714 fatalities.

2019: In Wuhan, China, a cluster of pneumonia of unknown cause was discovered in December of that year. It was subsequently determined to be SARS Covid-19. [5]

2020 and 2021: With an official death toll of 171, COVID-19 was considered a pandemic on January 30, 2020. As of December 31, 2020, this number was 1,813,188. However, it is anticipated that the COVID-19 pandemic would have killed at least 3 million people worldwide in 2020, which is 1.2 million more than the number of deaths that were officially reported [6]. In the 24 months, ie. From January 1, 2020 to December 31, 2021, the global COVID-19 mortality rate was 14.91 million, which was 9.49 million more deaths than the number of deaths worldwide that were directly attributed to COVID-19. [7]

2022: As of December 22, 2022, the United States, India, and France have the highest percentage of COVID-19 instances globally, with the United States accounting for slightly more than 15% of cases. [Medical University of Johns Hopkins]

2023: In the last 28 days (3 to 30 April 2023), there were over 17,000 recorded deaths and over 2.8 million new cases worldwide. The Western Pacific, Eastern Mediterranean, and South-East Asia regions have experienced a rise in recorded cases and fatalities. More than 6.9 million deaths and more than 765 million confirmed cases have been reported worldwide as of April 30, 2023. [8]

2. VIRAL HEPATITIS

Causative Agent: - *Hepatitis Virus A/B/C/D/E*

Duration of Prevalence – Cases occur every year

Liver inflammation, or hepatitis, can be brought on by viral infections, drug or alcohol abuse, autoimmune disorders, and some drugs or poisons. A particular kind of hepatitis brought on by several viruses is known as viral hepatitis.

Viral hepatitis comes in various forms, including:

1. **Hepatitis A (HAV):** transmitted through the ingestion of contaminated food or water.
2. **Hepatitis B (HBV):** transmitted through exposure to infected blood, unprotected sex or from infected mother to newborn during childbirth. It can cause acute to chronic infection and can lead to severe liver complications.
3. **Hepatitis C (HCV):** transmitted through exposure to infected blood, by sharing needles among drug users or receiving blood transfusions.
4. **Hepatitis D (HDV):** This virus can only infect individuals already infected with hepatitis B. HDV is transmitted through contact with infected blood or sexual contact.
5. **Hepatitis E (HEV):** It is primarily transmitted through the consumption of contaminated food or water. Hepatitis E is an acute infection. [9]

Symptoms

1. **Fatigue:** Often characterized as exhaustion or low energy, fatigue is a typical hepatitis symptom.
2. **Jaundice:** One of the hallmark signs of hepatitis is jaundice, which is the yellowing of the skin and eyes. Bilirubin builds up in the body as a result of the liver's inability to handle it.
3. **Abdominal pain and discomfort:** Abdominal pain and discomfort: Some people who have viral hepatitis may feel pain or discomfort in their abdomen, especially around their liver.
4. **Loss of appetite:** Hepatitis may cause weight loss and a decrease in appetite.
5. **Nausea and vomiting:** Viral hepatitis can cause nausea and vomiting in certain patients.
6. **Dark urine and pale stools:** Hepatitis can result in color changes in the feces and urine. Stools may turn pale or clay-colored, and urine may seem dark.
7. **Muscle and joint pain:** Hepatitis can cause pain in the muscles and joints.
8. **Fever:** Viral hepatitis can occasionally result in a mild temperature. [10]

Treatment

1. **Supportive Care:** Maintaining a general health and controlling symptoms throughout the infection, including getting enough sleep, eating a healthy diet, and drinking plenty of water.
2. **Antiviral Medications:** For several forms of viral hepatitis, including hepatitis B and hepatitis C, antiviral drugs are available. These drugs function by lowering liver inflammation and inhibiting viral multiplication.
3. **Immune Modulators:** Certain forms of viral hepatitis, including hepatitis B and hepatitis D, may be treated using immunomodulatory drugs. These aid in lowering liver inflammation and regulating the immunological system.
4. **Hepatitis A Vaccine:** There is a vaccine for hepatitis A, and it works quite well to stop the infection.
5. **Hepatitis B Vaccine:** Vaccination is available for hepatitis B.
6. **Liver Transplant:** A liver transplant may be an option for treating severe viral hepatitis patients, such as advanced liver cirrhosis or liver failure. [11]

Statistics: According to WHO estimates, 1.3 million people died from HBV and HCV in 2015, and 1 in 3 individuals globally are afflicted with one of these viruses. Twenty million people have HEV infection, 185 million have HCV infection, and 2 billion have HBV infection. One or more hepatitis viruses infect over 2.3 billion individuals worldwide. [12]

3. CHOLERA

Causative Agent - *Vibrio cholerae* bacteria

Duration of Prevalence – 2013- 15, 2017-18

Acute, secretory diarrhea brought on by an infection with *Vibrio cholerae* is known as cholera. Most are destroyed by stomach acid after ingesting *V. cholerae*. Cholera toxin is created when surviving bacteria infiltrate the small intestine. [13]

Symptoms

1. **Profuse Watery Diarrhea:** The primary sign of cholera is watery, abundant diarrhea.
2. **Vomiting:** Individuals suffering from cholera suffer from vomiting, which can cause fluid loss and contribute to dehydration.
3. **Dehydration:** Because cholera causes significant fluid loss through vomiting and diarrhea, it can lead to severe dehydration.
4. **Muscle Cramps:** individuals with cholera have muscle cramps, especially in their legs, due to electrolyte imbalances caused by dehydration.
5. **Rapid Heart Rate:** Cholera can lead to an increased heart rate.
6. **Low Blood Pressure:** In extreme situations, cholera can result in hypotension, or low blood pressure, which can induce lightheadedness, dizziness, and fainting.
7. **Fatigue and Weakness:** Cholera can cause extreme fatigue and weakness due to the body's dehydration and electrolyte imbalances. [14]

Treatment

1. **Oral Rehydration Solution (ORS):** The consistent use of ORS is the primary treatment for cholera.
2. **Intravenous Fluids:** Intravenous (IV) fluids may be required in severe cholera patients.
3. **Antibiotics:** Antibiotics are used to reduce the duration of the illness.
4. **Zinc Supplements:** Zinc supplements are used for children, as it reduces the duration and severity of diarrhea in cholera cases.
5. **Supportive Care:** Supportive care involves providing comfort measures and addressing associated symptoms including resting, maintaining proper hygiene, and managing any complications or comorbidities. [15]

Statistics: - Between 1.3 and 4.0 million cases of cholera occur each year, and the virus causes between 21,000 and 143,000 fatalities worldwide. In 2020, 24 countries reported 3,23,369 cases and 857 deaths. [16]

4. MEASLES

Causative Agent: ssRNA virus of Paramyxoviridae family and genus Morbillivirus

Duration of Prevalence: - 2014, 2019-20

Rubeola, another name for measles, is a highly contagious viral infection that mainly affects youngsters but can infect anyone who is not immune, regardless of age. It is brought on by the measles virus, which spreads quickly in areas with low vaccination rates and is disseminated by respiratory droplets. Despite efforts to manage and eradicate the disease, outbreaks of measles persist, making it a serious global health concern. [17]

Symptoms

Measles symptoms can linger for several weeks and start to show about 10 to 14 days after viral contact. The common symptoms are:

1. **Fever:** A high temperature, typically greater than 101°F (38.3°C), is frequently the first sign of measles. The fever may last for a few days.
2. **Runny Nose:** Many individuals with measles experience a runny or congested nose. This symptom is often accompanied by sneezing.
3. **Cough:** Persistent coughing, either dry or with mucous, is a symptom of measles.
4. **Red, Watery Eyes (Conjunctivitis):** Inflammation of the conjunctiva, the thin membrane that covers the whites of the eyes, can result after a measles infection. Redness, watery eyes, and light sensitivity are the results of this.
5. **Koplik's Spots:** One of the characteristic signs of measles is the presence of small, white spots surrounded by a reddish background on the inside lining of the cheeks. These spots, known as Koplik's spots, typically appear a few days before the onset of the rash.
6. **Rash:** Usually, a few days after the onset of symptoms, the measles rash develops. It begins as red, flat dots that progressively blend together. Usually, the rash starts on the face and moves to the arms, legs, feet, neck, and trunk. The rash may become somewhat elevated and change color as it worsens. The rash may persist for a week or so before going away. [18]

Treatment: -

There isn't a specific antiviral medication for measles. These are some important measles treatment factors:

1. **Supportive Care:** Providing supportive care is essential in managing measles symptoms and promoting recovery. This includes:
 - **Rest:** Promoting bed rest to aid in the body's recuperation and energy conservation.
 - **Adequate Fluid Intake:** Promoting hydration by encouraging the individual to drink plenty of fluids, such as water, oral rehydration solutions, and clear soups.
 - **Fever Management:** Giving over-the-counter drugs that reduce fever, including ibuprofen or acetaminophen.
 - **Eye Care:** Using a warm, damp cloth to gently clean the eyes and relieve discomfort associated with conjunctivitis.
 - **Cough Relief:** Recommending over-the-counter cough syrups or lozenges to soothe the cough.
2. **Complication Management:** Prompt recognition and management of complications associated with measles are crucial.
3. **Vitamin A Supplementation:** Particularly in communities with vitamin A deficiency, vitamin A supplementation has been demonstrated to lessen the severity of measles-related complications and mortality.
4. **Isolation and Infection Control:** Since measles is extremely contagious, infected people should be kept apart to stop the virus from spreading. [19]

Statistics: - Despite the fact that measles was declared eliminated in the nation in 2000, 31 states recorded around 1,300 cases in 2019, the highest cases since 1992. The WHO projected that there were approximately 353,236 measles cases worldwide in 2018. Since then, this has dropped as there were approximately 159,000 instances in 2020. 288 cases of measles were reported in the United States in the first five months of 2014. [20]

5. YELLOW FEVER

Causative Agent: - Arbovirus transmitted to humans by the bites of infected *Aedes* and *Haemagogus* mosquitoes.

Duration of Prevalence: - cases of yellow fever occur every year in Africa and South America.

The yellow fever virus (YFV), of the Flaviviridae family, is the cause of yellow fever. The bites of infected mosquitoes, especially those of the *Aedes aegypti* species, spread it. In South America and Africa, yellow fever is mostly found in tropical and subtropical areas. [21]

Symptoms: - The incubation period of yellow fever is usually 3 to 6 days. The common symptoms of yellow fever are:

1. **Initial Phase:**
 - **Fever:** Sudden onset of high fever, exceeding 38.3°C
 - **Headache:** Intense and persistent headache.
 - **Muscle and Joint Pain:** Severe muscle and joint pain, particularly in the back and limbs.
 - **Fatigue:** Generalized weakness, fatigue, and exhaustion.

- Nausea and Vomiting: Nausea, vomiting, and sometimes abdominal pain.
- Loss of Appetite: Decreased appetite and loss of interest in food.
- Dizziness: Feeling lightheaded or dizzy.
- 2. Remission Phase:**
 - Many individuals recover within 3 to 4 days after the initial phase, and their symptoms improve.
 - However, some individuals may progress to the toxic phase of yellow fever.
- 3. Toxic Phase:**
 - **Recurrence of Symptoms:** After a brief remission period, symptoms may return, and the disease progresses to a more severe stage.
 - **High Fever:** Fever may persist, and temperatures can reach dangerous levels.
 - **Jaundice:** Yellowing of the skin and eyes (jaundice), which gives the disease its name.
 - **Abdominal Pain:** Severe abdominal pain due to liver inflammation.
 - **Vomiting:** Continuous vomiting, often accompanied by blood (hematemesis).
 - **Bleeding:** Internal bleeding can occur, leading to blood in the urine (hematuria), stools (melena), or bleeding from the gums, nose, or other sites.
 - **Kidney Dysfunction:** Impaired kidney function may manifest as decreased urine output or dark-colored urine.
 - **Delirium and Seizures:** In severe cases, individuals may experience confusion, delirium, and even seizures.
 - **Organ Failure:** Yellow fever can cause multiple organ failure, leading to shock, coma, and potentially death. [22]

Treatment – As such there is no specific treatment for yellow fever. The major treatment methods may include: -

- 1. Hospitalization:** Individuals with severe symptoms should be hospitalized immediately for close monitoring.
- 2. Supportive Care:** Supportive measures are crucial in managing yellow fever and promoting recovery. They include:
 - **Rest and Hydration:** Bed rest is recommended to conserve energy and allow the body to recover. Adequate hydration is essential.
 - **Fever Management:** Medications such as acetaminophen (paracetamol) should be given to reduce fever.
- 3. Complication Management:** Yellow fever can lead to severe complications, such as liver failure, kidney dysfunction, bleeding disorders, and organ damage.
 - **Monitoring and Supporting Organ Function:** Close monitoring of liver and kidney function is essential.
 - **Management of Bleeding:** If bleeding complications arise, blood transfusions and other interventions may be necessary to control bleeding and restore blood volume.
- 4. Infection Control:** Patients with yellow fever should be isolated to prevent the spread of the virus to others. [23]

Statistics: - Peru and Colombia reported 23 instances of yellow fever in 2013, including 15 fatalities, to the World Health Organization. According to estimates, yellow fever in Africa in 2013 resulted in 78,000 fatalities and 130,000 severe illnesses. [24] [25]

6. CHIKUNGUNYA

Causative Agent: - *Chikungunya Virus*

Duration of Prevalence: - few cases keep occurring every year

An alphavirus belonging to the *Togaviridae* family is the cause of chikungunya, a virus spread by mosquitoes. It is spread via *Aedes* mosquito bites, primarily from *Aedes aegypti* and *Aedes albopictus*.

Symptoms: -

The common symptoms associated with chikungunya are:

- 1. Fever:** High fever that appears suddenly and frequently reaches 39°C or higher.
- 2. Joint Pain:** Severe joint pain, which is often symmetrical.
- 3. Muscle Pain:** Intense muscle pain, which can be severe and affect multiple muscle groups.
- 4. Headache:** Persistent or severe headache, often accompanied by sensitivity to light or sensitivity to sound.
- 5. Rash:** The trunk and limbs may get a maculopapular rash.
- 6. Fatigue:** Generalized fatigue and weakness are common symptoms during the acute phase of the illness.

7. **Swelling:** Swelling and redness may occur in the affected joints. [26]

Treatment: -

There is no specific treatment for Chikungunya. Some of the basic treatments are:

1. **Rest and Hydration:** It's critical to get sufficient rest so the body can heal.
2. **Pain Relief:** Several pain-relieving drugs are taken so that patients can be relieved of their pain.
3. **Symptom Management:** Other symptomatic treatments include: - Applying cold compresses to reduce inflammation.
4. **Prevention of Mosquito Bites:** Since mosquitoes are the vector of chikungunya, it is crucial to prevent mosquito bites in order to stop the virus from spreading. [27]

Statistics: - As of February 13, 2015, there were around 1.2 million suspected and confirmed cases of the Chikungunya virus disease throughout the Caribbean and other parts of the Americas. There have been 281 fatalities and 214,317 recorded cases as of June 7, 2023. The countries with the highest number of cases reported include Brazil (124 270 cases), Paraguay (85 889), Argentina (1 336), Bolivia (1 233), and Thailand (453 instances). There have been reported casualties in Brazil (25) and Paraguay (256). [28]

7. DENGUE

Causative Agent: - caused by the virus of *Flaviviridae* family

Duration of Prevalence: - few cases of dengue have been occurring every year

The bite of an infected *Aedes* mosquito, mainly *Aedes aegypti*, can cause dengue fever, a virus that infects people. Dengue is common worldwide in tropical and subtropical locations, especially in cities and semi-urban settings.

Symptoms: - Four to seven days following an infected mosquito bite, the symptoms start to show. The typical signs of dengue fever include:

1. **High Fever:** Sudden, severe fever that frequently reaches 40°C or greater. Fever can linger for five to seven days.
2. **Severe Headache:** Severe and ongoing headache that is frequently felt in the forehead or behind the eyes.
3. **Eye Pain:** Discomfort behind the eyes, especially while moving them or staring at bright lights.
4. **Muscle and Joint Pain:** Severe muscle and joint pain, giving dengue its nickname "breakbone fever."
5. **Rash:** Two to five days following the start of a fever, a rash may appear. It can be itchy and usually manifests as tiny, red spots or patches on the skin. Usually, the rash begins on the trunk and moves to the limbs.
6. **Fatigue:** Generalized weakness, fatigue, and a feeling of exhaustion.
7. **Nausea and Vomiting:** Nausea, vomiting, and loss of appetite may occur.
8. **Abdominal Pain:** Pain or discomfort in the abdomen, often in the upper and lower abdomen.
9. **Swollen Lymph Nodes:** Some individuals may experience swollen lymph nodes in the neck and groin area. [29]

Treatment: -

Supportive care is the main method of managing dengue fever because there is no specific antiviral medication for the illness. These are the main facets of dengue fever treatment:

1. **Rest and Fluid Intake:** To take proper rest and to drink plenty of fluids to prevent dehydration.
2. **Fever Control:** Medications such as paracetamol are commonly used to control fever.
3. **Pain Management:** Acetaminophen and other over-the-counter painkillers can help reduce dengue fever-related muscular and joint pain.
4. **Hydration:** To maintain hydration and electrolyte balance in patients with moderate to severe dengue fever, oral rehydration solutions or intravenous fluids may be required.
5. **Monitoring and Hospitalization:** It is crucial to regularly check blood counts, fluid balance, and vital signs, especially in people with severe dengue or indications of sequelae. In extreme situations, hospitalization can be necessary to offer supportive treatment and close observation.
6. **Symptom Management:** Additional measures may be taken to manage specific symptoms. For example, anti-emetic medications can be given to control nausea and vomiting. Itchiness from the rash can be relieved with antihistamines or topical soothing lotions.
7. **Blood Transfusion:** A blood transfusion may be required to restore blood volume and platelet count in rare instances of severe dengue with substantial hemorrhage or platelet loss. [30]

Statistics: - A total of 28,09,818 dengue cases, including 1290 fatalities, were recorded in 2022. As of June 8, 2023, there have been 974 dengue deaths and 2,162,214 cases registered worldwide. The nations that have the highest number of instances include Argentina, Bolivia, Peru, and Brazil. [31]

8. SWINE FLU

Causative Agent: - *Influenza A virus*

Duration of Prevalence: - 2013-14

The respiratory disease known as swine flu, or H1N1 influenza, is brought on by the H1N1 influenza-A virus. The virus is thought to have started in pigs, which is why it is named swine flu, yet it may also spread from human to person. Seasonal influenza and swine flu are similar in how they propagate. Respiratory droplets from an infected person's cough, sneeze, or speech can spread it. Touching infected surfaces or objects and then touching the mouth, nose, or eyes can potentially spread the virus. [32]

Symptoms: - The symptoms of swine flu are similar to those of seasonal influenza. They typically include:

1. **Fever:** High body temperature is a common sign of swine flu, frequently exceeding 100.4°F (38°C).
2. **Cough:** A persistent cough that might be productive (producing phlegm) or dry.
3. **Sore Throat:** Throat irritation or soreness that may be accompanied by swallowing difficulties.
4. **Runny or Stuffy Nose:** Nasal congestion, sneezing, or a runny nose may be present.
5. **Body Aches:** Generalized muscle or body aches, often described as feeling "achy" or "sore."
6. **Headache:** Intense or persistent headache, which can vary in severity.
7. **Fatigue:** Feeling tired or exhausted, often accompanied by a lack of energy.
8. **Chills:** Experiencing sudden cold sensations or shivering.
9. **Nausea, Vomiting, and Diarrhea:** These gastrointestinal symptoms can occur, particularly in children, but are less common in adults. [33]

Treatment: - The treatment of swine flu, also known as H1N1 influenza, involves both supportive care and antiviral medications. Here are the key aspects of treatment for swine flu:

1. **Supportive Care:** Rest and maintaining proper hydration are essential.
2. **Over-the-Counter Medications:** Pain, fever, and other symptoms including headaches and body pains can all be reduced with over-the-counter drugs like paracetamol.
3. **Antiviral Medications:** A medical professional may prescribe antiviral drugs to patients. Starting these drugs within the first 48 hours after the beginning of symptoms can help lessen the severity and length of the illness. They function by stopping the influenza virus's ability to replicate.
4. **Hospitalization and Monitoring:** Hospitalization may be necessary in extreme circumstances, particularly for those who are at a high risk of complications.
5. **Prevention of Complications:** Individuals with swine flu should be monitored for any signs of complications, such as pneumonia or respiratory distress. [34]

Statistics: -The 2009 H1N1 virus was the cause of many of the severe flu cases that the CDC received during the 2013–2014 season among young and middle-aged individuals. Approximately 60% of hospitalizations related to flu that were reported to the CDC's influenza monitoring system involved patients aged 18 to 64. [35]

9. MONKEY POX

Causative Agent: - *monkeypox virus*

Duration of Prevalence: - 2022- 23

Monkeypox is a virus-borne illness. This virus, which is named after the monkeys in which it was initially identified, is mainly found in Central and West African nations. When people come into close contact with infected animals, like rats or monkeys, they can contract monkeypox. In direct contact with an infected person's respiratory secretions, skin lesions, or bodily fluids, the disease can spread from person to person. [36]

Symptoms: -

The symptoms of monkeypox can vary in severity, ranging from mild to more severe cases. Here are the commonly observed symptoms:

1. **Fever:** Monkeypox begins with a fever.
2. **Headache:** Both mild and severe headaches are experienced by patients.
3. **Fatigue:** Typical signs of monkeypox include weakness and generalized exhaustion. People may feel worn out and unmotivated.
4. **Muscle aches:** Muscle aches known as myalgia, can occur throughout the body.
5. **Backache:** Some individuals with monkeypox may experience pain in their back, which can be mild to moderate intensity.
6. **Skin rash:** Monkeypox is characterized by a rash, which often develops a few days after the fever starts.
7. **Lymphadenopathy:** Enlarged lymph nodes, known as lymphadenopathy, may occur in the affected area. [37]

Treatment: - The goals of monkeypox treatment are to control symptoms and encourage healing. There isn't a specific antiviral drug on the market right now to treat monkeypox.

Symptom Management: Acetaminophen, often known as paracetamol, is one medication that can be used to lower temperature, relieve pain, and ease other symptoms like headaches and body aches. Because they increase the risk of bleeding, non-steroidal anti-inflammatory medicines (NSAIDs) should be avoided.

1. **Hydration:** Sustaining adequate hydration is crucial, particularly in cases of fever, perspiration, or gastrointestinal complaints.
2. **Skin Care:** Proper care of the skin lesions is important to prevent secondary infections. Keep the affected areas clean and dry. Avoid scratching or picking at the lesions to minimize the risk of complications.
3. **Infection Prevention:** Maintaining proper cleanliness is crucial to stopping the spread of monkeypox. When hand washing facilities are unavailable, use of alcohol-based hand sanitizers and washing the hands often with soap and water is recommended.
4. **Hospitalization:** In severe cases of monkeypox hospitalization may be necessary. [38]

Statistics: - In the United Kingdom, the first case was discovered on May 6, 2022, in London. A number of nations and regions reported cases between May 18th, 2022, and May 2023, primarily in Europe and America and also in Asia, Africa, and Oceania. [39]

10. EBOLA

Causative Agent: - *Virus Zaire ebolavirus and Sudan ebolavirus*

Duration of Prevalence: - 2013-16

The Ebola virus is the cause of the deadly viral illness known as Ebola. It is a member of the Filoviridae family and infects humans and other primates, causing epidemics of illnesses that are extremely contagious and fatal. According to geographic discoveries, there are five subtypes of Ebolaviruses: Tai Forest, Sudan, Zaire, Bundibugyo, and Reston. The WHO claims that fruit bats are the Ebola virus's natural host. [40]

Symptoms: -A variety of symptoms, from mild to severe intensity, are known to be caused by Ebola. The common symptoms of Ebola are:

1. **Fever:** The onset of Ebola is often indicated by the sudden onset of high fever. Fever is usually one of the earliest symptoms and can be persistent or intermittent.
2. **Fatigue:** People with Ebola frequently describe feeling extremely weak and exhausted.
3. **Muscle and Joint Pain:** An Ebola infection can cause excruciating joint and muscular pain. This may hinder physical activity and cause discomfort when moving.
4. **Headache:** Many people who have Ebola suffer from excruciating headaches that can last for a long time.
5. **Sore Throat:** Some people may have pain and discomfort when swallowing, along with a sore throat.
6. **Gastrointestinal Symptoms:** Ebola can cause various gastrointestinal symptoms, including nausea, vomiting, and diarrhea. Diarrhea associated with Ebola is often severe and can be bloody.
7. **Rash:** A characteristic rash may develop in some cases of Ebola. The rash can vary in appearance, ranging from maculopapular (flat, red spots) to petechial (tiny, reddish-purple spots).
8. **Impaired Kidney and Liver Function:** Ebola can impact liver and kidney function, resulting in aberrant lab test findings and possible consequences.
9. **Hemorrhagic Symptoms:** Blood in the stool, nosebleeds, mouth bleeding, or easy bruising are examples of bleeding symptoms that might appear in severe Ebola patients. [41]

Treatment: - In order to control symptoms, avoid complications, and encourage recovery, supportive care is the primary emphasis of Ebola treatment. As of right now, no particular antiviral medication has been approved to treat Ebola.

1. **Fluid and Electrolyte Management:** It's critical to maintain enough electrolyte balance and hydration. Electrolyte solutions and intravenous fluids are administered to keep blood pressure stable and avoid dehydration.
2. **Symptom Management:** Paracetamol is one medication that can be used to lower temperature, relieve pain, and ease other symptoms like body aches and headaches. Antiemetic drugs may be administered to control nausea and vomiting.
3. **Blood Pressure Support:** In severe cases, Ebola can cause low blood pressure (hypotension). Blood pressure can be stabilized and organ perfusion improved with the use of drugs and fluid resuscitation.
4. **Infection Control:** Strict infection control procedures are used to stop Ebola from spreading. Important steps include separating affected people, using personal protective equipment (PPE) appropriately, handling and disposing of contaminated things safely, and following infection prevention guidelines.

5. **Treatment of Complications:** Ebola can lead to various complications, such as electrolyte imbalances, kidney and liver dysfunction, and bacterial infections. Specific interventions may be required to manage these complications, including dialysis for kidney failure and antibiotics for bacterial infections.

6. **Supportive Care:** Supportive care measures, such as rest, nutritional support, and psychological support, are important for the overall well-being and recovery of individuals with Ebola. [42]

Statistics: - 2014 – In Democratic Republic of Congo, 69 cases were reported out of which 49 people died. 2018- 3470 cases were reported out of which 2287 died in Congo and Uganda.

2022- 164 cases reported and 55 died in Uganda. [43]

11. ZIKA VIRUS

Causative Agent: - Zika virus

Duration of Prevalence: - 2013-14, 2015-16

The Zika virus belongs to the Flaviviridae family of viruses. *Aedes* mosquitoes that are active during the day, such *Aedes aegypti* and *Aedes albopictus*, are the ones that spread it. The Zika Forest in Uganda, where the virus was initially detected in 1947, is the source of its name. It was initially discovered in a monkey called a Rhesus macaque. [44]

Symptoms: - Infection with the Zika virus can cause mild to moderate symptoms that frequently mimic those of other diseases spread by mosquitoes. Usually, symptoms start to show up a few days to a week after being bitten by an infected mosquito. The common symptoms include:

1. **Fever:** Many people infected with Zika virus experience a low-grade fever, which is mild and lasts for a few days to a week.
2. **Rash:** A characteristic rash often accompanies Zika virus infection. The rash is typically maculopapular, meaning it consists of small, flat, or raised red spots.
3. **Joint and Muscle Pain:** Zika virus infection can cause joint pain and muscle pain.
4. **Headache:** From mild to severe Headaches are a common symptom of Zika virus infection.
5. **Conjunctivitis:** Zika virus can cause inflammation of the conjunctiva. This can result in redness, irritation, and a "pink eye" appearance.
6. **Other Symptoms:** Other less common symptoms of Zika virus infection include fatigue, nausea, vomiting, abdominal pain and swollen lymph nodes. [45]

Treatment: - As of right now, there isn't a specific antiviral treatment for Zika virus infections. The main goal of Zika virus treatment is symptom relief and support which includes:

1. **Rest and Hydration:** Getting plenty of rest and staying well-hydrated is important to help the body fight the infection and manage symptoms.
2. **Pain and Fever Relief:** The Zika virus infection-related fever, discomfort, and headache can be reduced with over-the-counter painkillers like acetaminophen (paracetamol). In particular, pregnant women and those with pre-existing medical issues should adhere to the specified dosage and seek advice from a healthcare provider.
3. **Avoiding Non-Steroidal Anti-Inflammatory Drugs (NSAIDs):** It is generally recommended to avoid NSAIDs, such as ibuprofen and aspirin, in case of suspected or confirmed Zika virus infection. NSAIDs may increase the risk of bleeding complications, particularly in cases where dengue fever cannot be ruled out, as both Zika and dengue viruses are transmitted by the same mosquito vector.
4. **Symptom Management:** Other measures, such as applying calamine lotion or taking antihistamines, can help reduce itching and soothe skin rashes caused by Zika virus infection. It is crucial to get advice from a pharmacist or medical expert for suitable suggestions. [46]

Statistics: - In October 2013, the initial Zika outbreak occurred in French Polynesia. By February 2014, there were an estimated 8,503 suspected cases and over 29,000 patients with Zika-like symptoms. In Brazil, the Zika virus started to spread between April 2015 and November 2016 and impacted over 1.5 million people.[47]

12.NIPAH

Causative Agent: - Nipah Virus

Duration of Prevalence: - 2018-19, 2021, 2023

A paramyxovirus, the Nipah virus is a member of the Paramyxoviridae family and genus Henipavirus. This zoonotic virus has the ability to seriously harm both people and animals. It was initially discovered after an outbreak in Singapore and Malaysia in 1999. [48]

Symptoms: - The incubation period for Nipah virus is typically 4 to 14 days. The common symptoms of it are:

1. **Fever:** A high temperature, frequently accompanied by chills, is one of the first signs of a Nipah virus infection.
2. **Muscle Pain:** Muscle aches and pain are common symptoms of Nipah virus infection. The pain can affect various muscle groups in the body.
3. **Respiratory Symptoms:** The Nipah virus is known to induce encephalitis, or inflammation of the brain. Neurological symptoms like seizures, coma, and even brain damage can arise from severe Nipah virus infections.
4. **Disorientation and Confusion:** As the infection progresses, individuals may experience disorientation, confusion, and mental disturbances. This can manifest as difficulties with concentration, memory, and altered consciousness.
5. **Encephalitis:** The Nipah virus is known to induce encephalitis, or inflammation of the brain. Neurological symptoms like seizures, coma, and even brain damage can arise from severe Nipah virus infections. [49]

Treatment: - As such, there is no specific antiviral treatment or vaccine available for Nipah virus infection, but may include the following treatment methods:

1. **Hospitalization:** Hospitalization is usually necessary for individuals with suspected or confirmed Nipah virus infection.
2. **Supportive Measures:** Supportive care focuses on relieving symptoms and maintaining vital organ functions.
3. **Infection Control:** Strict infection control procedures are essential for stopping the Nipah virus from spreading, especially in medical facilities like wearing personal protective equipment (PPE), handling and disposing of contaminated objects appropriately, and putting isolation procedures for affected people into place.
4. **Contact Tracing and Surveillance:** Identifying and tracking people who have had close contact with confirmed patients during outbreaks requires the use of contact tracing and surveillance techniques. This stops the virus from spreading by assisting in the early identification, isolation, and treatment of new infections.

Statistics: -

1. 2018: May: D22 people died in Perambra near Calicut, Kerala.
2. Few cases occurred in 2019 and 2021
3. 2023: In Bangladesh, 11 cases with eight fatalities have been documented between January 4, 2023, and February 13, 2023. [50]

13. MIDDLE EAST RESPIRATORY SYNDROME - [MERS] -

Causative Agent: - Middle East Respiratory Syndrome Coronavirus MERS-CoV

Duration of Prevalence: - 2012-19

The virus known as MERS-CoV spreads from camels to people. Humans can contract the disease from camels by direct touch (such as petting or grooming) or indirect contact (such as coming into contact with camel excrement or goods). [51]

Symptoms: -

The incubation period for MERS is usually around 2 to 14 days. The common symptoms of MERS are:

1. **Respiratory Symptoms:** The respiratory system is impacted by MERS, and those who have contracted MERS-CoV may have the following respiratory symptoms: Breathlessness, chest pain, and coughing.
2. **Fever:** Most individuals with MERS develop a fever, which is usually high and persistent.
3. **Chills and Rigors:** Some individuals may experience chills and rigor, which are episodes of shaking or shivering accompanied by a sensation of coldness.
4. **Muscle Pain:** Muscular aches and pain are common symptoms of MERS.
5. **Fatigue:** People with MERS often report experiencing extreme weakness and exhaustion.
6. **Gastrointestinal Symptoms:** Gastrointestinal symptoms like nausea, vomiting, diarrhea, and abdominal discomfort can occasionally be brought on by MERS. [52]

Treatment: - In order to manage symptoms and consequences, supportive care is the mainstay of MERS treatment.

1. **Hospitalization:** Individuals with MERS, particularly those with severe illness, may require hospitalization.
2. **Supportive Measures:** Supportive care is provided to relieve symptoms and maintain vital organ functions. This may include Fluid and electrolyte management, Oxygen therapy, Medications. Ventilator support.

3. **Infection Control:** To stop MERS from spreading in healthcare settings, strict infection control procedures are essential.
4. **Experimental Treatments:** Numerous experimental treatments and antiviral drugs have been investigated for MERS. [53]

Statistics: - 2499 laboratory-confirmed human cases of MERS-CoV infection were reported from 27 countries between April 2012 and the end of December 2019, with Saudi Arabia accounting for the majority of these cases. Epidemics of human-to-human transmission were common; the worst instances happened in Jeddah and Riyadh in 2014 and South Korea in 2015. [54]

14. BIRD FLU – H5N1

Causative Agent: - Influenza A virus

Duration of Prevalence: - 2014, 2022-23

Inhalation and direct or indirect touch are just two of the many ways that human influenza can spread. For infants and young children, avian influenza A (H5N1) has a high fatality rate. On the other hand, four strains in particular have caused concern recently: following H5N1's arrival in 1997, H7N9 in 2013, H5N6 in 2014, and H5N8 in 2016. [55]

Symptoms: - The symptoms commonly associated with H5N1 infection in humans are:

1. **Fever:** Sudden onset and persistent high fever is one of the main symptoms of H5N1 infection.
2. **Respiratory Symptoms:** Coughing, shortness of breath, and chest pain are among the severe respiratory symptoms that H5N1 can induce.
3. **Influenza-like Symptoms:** H5N1 infection can produce symptoms similar to those of seasonal influenza, like -
 - Sore throat
 - Runny or stuffy nose
 - Headache
 - Fatigue and weakness
 - Muscle aches and joint pain
4. **Gastrointestinal Symptoms:** Some H5N1 infections can cause gastrointestinal symptoms as nausea, vomiting, and diarrhoea.[56]

Treatment: - The main aspects of H5N1 treatment are--:

1. **Hospitalization:** Individuals suspected or confirmed to have H5N1 infection may require hospitalization.
2. **Supportive Care:** Supportive care aims to relieve symptoms, manage complications, and maintain vital organ functions. It may include the following measures: Fluid and electrolyte management, Oxygen therapy, Ventilator support, Medications to reduce fever and pain.
3. **Antiviral Medications:** Antiviral medications, particularly neuraminidase inhibitors like Zanamivir (Relenza) or Oseltamivir (Tamiflu), are frequently used to treat H5N1 infections. [57]

Statistics: - Between 2003 and 2022, the World Health Organization received reports of about 860 H5N1 disease cases from 19 countries.

15. MARBURG VIRUS -

Causative Agent: - *Marburg virus*

Duration of Prevalence: - 2017, 2022

The Marburg virus (MARV), which causes hemorrhagic fever, is a member of the Filoviridae family. The virus can be transmitted by coming into contact with a certain kind of fruit bat or by human fluids from unprotected sexual contact and skin breaks.

Symptoms: - Usually, 2 to 21 days following viral exposure, Marburg virus disease symptoms start to show. Similar to other viral infections, the earliest symptoms are vague. As the illness worsens, symptoms may become more intense. The following are typical signs of an infection with the Marburg virus:

1. **Fever:** High fever is often one of the earliest symptoms of this disease. The fever is usually sudden in onset and may be accompanied by chills or rigor.
2. **Headache:** Severe headaches are common and can be persistent.
3. **Malaise and Fatigue:** People frequently report experiencing severe weakness, exhaustion, and an overall feeling of being ill (malaise).
4. **Muscle and Joint Pain:** Severe muscle and joint pain are common symptoms of Marburg virus infection.
5. **Nausea and Vomiting:** Many individuals experience nausea, vomiting, and sometimes diarrhea.
6. **Chest Pain and Respiratory Symptoms:** People may occasionally experience respiratory symptoms such coughing, shortness of breath, and trouble breathing in addition to chest pain.

7. **Hemorrhagic Manifestations:** Some people may experience hemorrhagic symptoms as the illness worsens, such as bleeding from the nose, rectum, mouth, or beneath the skin. Internal bleeding can also happen, leading to blood in the urine or gastrointestinal hemorrhage.
8. **Organ Dysfunction:** Severe cases may result in renal and liver failure, among other organ dysfunctions.

Treatment: - Marburg virus disease does not currently have a licensed vaccine or specialized antiviral treatment. The main goal of treatment is to manage symptoms with supportive care. Here are the key aspects of Marburg virus treatment:

1. **Hospitalization:** Individuals, particularly those with severe illness, require hospitalization in specialized healthcare facilities equipped to handle highly contagious and dangerous pathogens.
2. **Supportive Care:** It includes various measures to alleviate symptoms and maintain vital organ functions, such as: Intravenous fluid and electrolyte management, Nutritional support, Oxygen therapy, Medications.
3. **Infection Control:** To stop the Marburg virus from spreading to other people and medical professionals, strict infection control procedures are necessary. To reduce the danger of transmission, isolation measures, barrier nursing approaches, and appropriate disposal of contaminated materials are used. [58]

Statistics: - 2017 – In Uganda a few cases were reported. Also, in Ghana in 2022 few cases reported.

CONCLUSION AND SUMMARY

In conclusion, this review paper has provided an extensive overview of diseases that have significantly impacted human beings over the last decade. Throughout the past ten years, numerous diseases have emerged, evolved, and have caused substantial challenges to global health.

One prominent theme that has emerged is the continued threat of infectious diseases. Outbreaks like the COVID-19 pandemic have demonstrated the disastrous consequences that novel pathogens have on societies worldwide. Additionally, the resurgence of previously controlled diseases like measles and dengue has highlighted the importance of ongoing vigilance and robust immunization programs.

Chronic diseases have also continued to burden individuals and healthcare systems. Non-communicable diseases such as cancer, cardiovascular disorders, diabetes, and mental health conditions have shown a steady rise in prevalence and impact. Lifestyle factors, including sedentary behavior, poor diet, and tobacco and alcohol use, have contributed significantly to the rise in these illnesses' prevalence.

Advancements in medical research and technology have provided promising solutions and interventions for combating diseases. Precision medicine, gene therapies, immunotherapies, and breakthroughs in vaccine development have offered new avenues for prevention, diagnosis, and treatment. Furthermore, the growing field of digital health and telemedicine has made healthcare services more accessible, particularly in rural or isolated locations.

However, several challenges and knowledge gaps persist. Global health disparities remain a pressing issue, with marginalized populations facing disproportionate burdens of disease. Antimicrobial resistance continues to threaten our ability to treat infectious diseases effectively. Climate change and environmental factors pose emerging health risks that demand attention. Furthermore, the COVID-19 pandemic has shown flaws in international health systems and brought attention to the necessity of more robust reaction and readiness plans.

To deal with these issues, collaboration among governments, international organizations, researchers, and healthcare providers is crucial. Effective disease prevention, detection, and control need investments in public health infrastructure, surveillance systems, and research. Furthermore, encouraging healthy lifestyles, providing fair access to healthcare, and advancing health education are all crucial elements of managing and preventing disease.

As we look toward the future, it is vital to recognize that diseases will continue to evolve and emerge. A proactive and interdisciplinary approach that combines scientific advancements, public health initiatives, and socioeconomic considerations will be paramount in minimizing the impact of diseases on human beings. By harnessing our collective knowledge and resources, in the upcoming years, we may work to create a world that is healthier and more resilient.

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