



SHORT COMMUNICATION

# Global Infectious Diseases in January 2023: Monthly Analysis

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## Abstract

Infectious diseases are a major threat to global health and the economic stability of societies worldwide. To prevent outbreaks, monitoring the growth trends of infectious diseases appears to be particularly important and necessary. Herein, data from epidemiological websites, such as the World Health Organization and National Health Council are used to illustrate the outbreak trends for infectious diseases worldwide. In the context of the COVID-19 pandemic, a global resurgence in other infectious diseases has been observed, particularly influenza in the United States. Proper surveillance and effective strategies are urgently required to keep emerging infectious diseases under control.

**Key words:** infectious diseases, COVID-19, influenza, outbreak, surveillance

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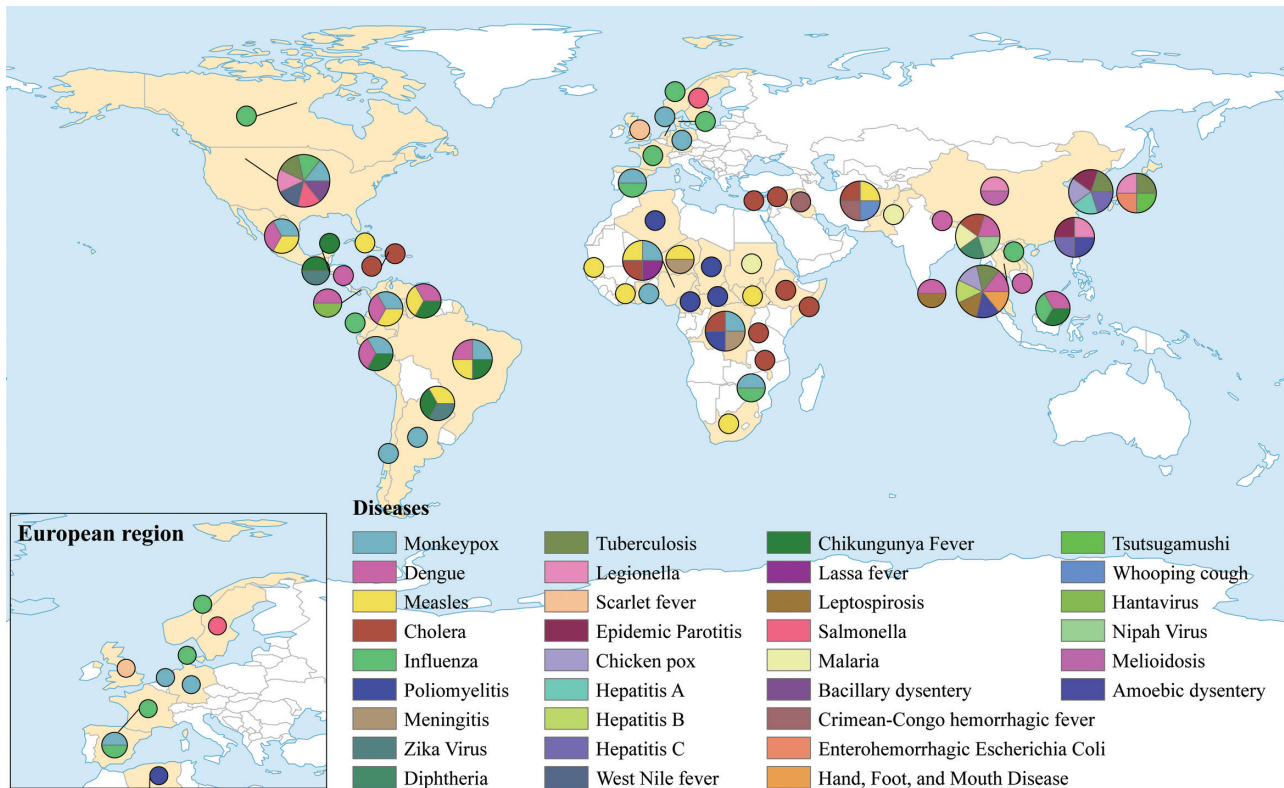
## INTRODUCTION

Infectious diseases, with their unpredictable and far-reaching consequences, have been an important part of human history. To control the spread of infectious diseases worldwide, and protect people's lives and safety, regular analysis of global infectious disease cases is critical. In the past month, cases of COVID-19 and monkeypox (Mpox) have significantly decreased. On January 30, 2023, the World Health Organization (WHO) declared that the COVID-19 pandemic continues to constitute a public health emergency of international concern, regarding the management of the COVID-19 pandemic transition period and mitigating potential negative effects. Meanwhile, the United States is having its worst influenza season since the COVID-19 pandemic. Dengue, measles and cholera remain public health concerns worldwide. Simultaneously,

more attention should also be paid to certain sporadic infectious diseases, such as Chikungunya fever, legionellosis, poliomyelitis, avian influenza and scarlet fever, to avoid global pandemics. The global prevalence of low-incidence infectious diseases from December 24, 2022 to January 23, 2023 was mapped by using the Global Outbreak Information Surveillance System (Fig 1).

## COVID-19

COVID-19 has rapidly overwhelmed the world since its sudden outbreak in 2019. In the past month, global cases of SARS-CoV-2 infection reached more than 50 million according to the WHO. The Western Pacific region had the largest proportion, at 89.86%, as compared with only 0.04% in the Eastern Mediterranean region and 0.05% in the Southeast Asia region. Although the epidemic was



**FIGURE 1** | Worldwide distribution of infectious diseases from December 24, 2022 to January 23, 2023.

severe in the Western Pacific region, daily new cases of COVID-19 decreased continually from a peak above 5 million to a trough of approximately 100,000, thus indicating that effective strategies might have been able to prevent further local spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Fig 2A, B).

Owing to continuing mutation of SARS-CoV-2, the ongoing pandemic has resulted in severe morbidity and mortality in the past 3 years. The global deaths due to COVID-19 reached approximately 134,000 over the past month, among which the Western Pacific region accounted for the highest proportion (67.08%), followed by the Americas (16.52%), Europe (15.66%), Southeast Asia (0.5%), the Eastern Mediterranean (0.16%) and Africa (0.08%). The daily deaths in the Western Pacific region remained above 1,000, peaking at approximately 4,500 in the middle of the past month, then decreasing to approximately 1,500 (Fig 2C, D).

## MPOX

Mpox, an emerging zoonotic disease, has become a global concern, owing to the increasing number of human outbreaks in recent months [1]. Approximately 1,400 Mpox cases were reported by the WHO in the past month, occurring primarily in the Americas (Fig 3A). The daily reported Mpox cases in different regions are described in detail in Fig 3B–D. Compared with the previous epidemic data released by the WHO, the global Mpox infections

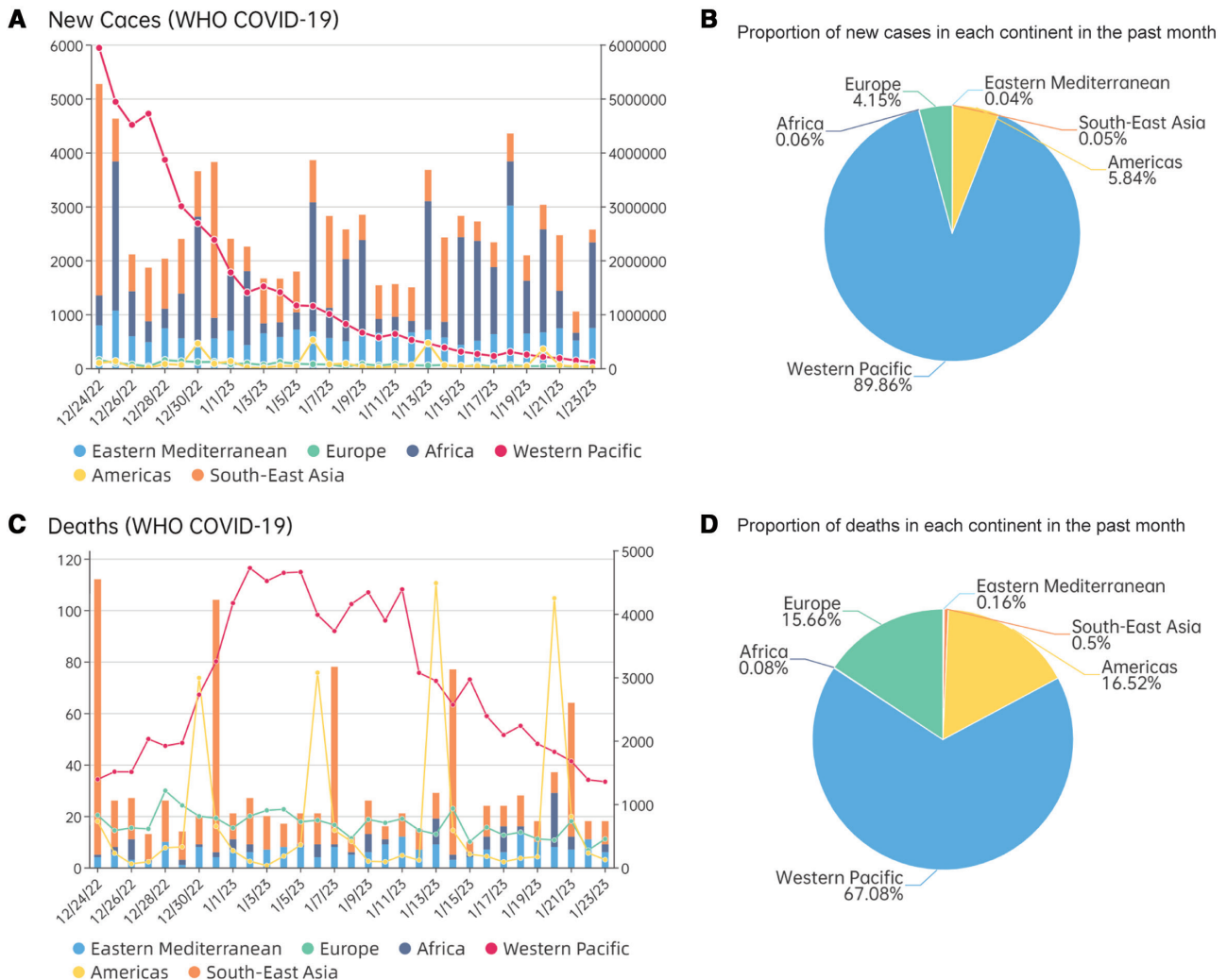
substantially decreased over the past month. However, strategies such as vaccination with smallpox vaccine remain necessary to control the re-emergence of the Mpox virus.

## CHOLERA

Cholera, caused by *Vibrio cholerae*, is an infectious disease occurring mainly in developing countries with deficiencies in water quality [2]. The disease remains endemic in approximately 17 countries, primarily Afghanistan and Syria, according to the data shown in Table 1. In 2022, the cumulative reported cholera cases exceeded 240,000 in Afghanistan (Table 1). Thus, oral cholera vaccines should be recommended for use in resource-limited settings to control and prevent outbreaks. Furthermore, improving environmental health conditions, such as water and sanitation, remains an effective approach to limiting the spread of cholera.

## DENGUE

Dengue, the most common mosquito-borne disease, is caused by four antigenically related but distinct serotypes dengue virus (DENV-1 to DENV-4) transmitted by *Aedes* spp. mosquitos [3]. The data in Table 2 show that the greatest burden of the disease was reported in tropical and subtropical regions, such as Brazil, where the cumulative dengue cases in the entire year of 2022 exceeded 2 million. Meanwhile, more than 200,000 dengue cases were found in Vietnam, Zimbabwe and the Philippines



**FIGURE 2** | Statistics on new confirmed cases and deaths due to COVID-19 worldwide daily. A, C: New cases and deaths due to COVID-19 have been reported daily on every continent (The primary coordinate on the left is the columnar ordinate, the secondary coordinate on the right is the broken line ordinate). B, D: Continent-specific proportions of new confirmed cases and deaths due to COVID-19 (December 24, 2022 to January 23, 2023; data were obtained from the World Health Organization website: <https://COVID19.who.int/>).

(Table 2). Without effective intervention measures, Dengue is predicted to increase in terms of both disease burden and geographic range in the future.

## MEASLES

Measles is a vaccine-preventable, highly contagious disease caused by an RNA virus [4]. However, owing to the limited immunization campaigns and political conflicts in many countries, a global resurgence in measles has been observed since 2016. In the past month, many countries have faced measles outbreaks, particularly Afghanistan (Table 3). The eradication of measles is feasible, but effective vaccination, access to the healthcare systems and public engagement are urgently needed.

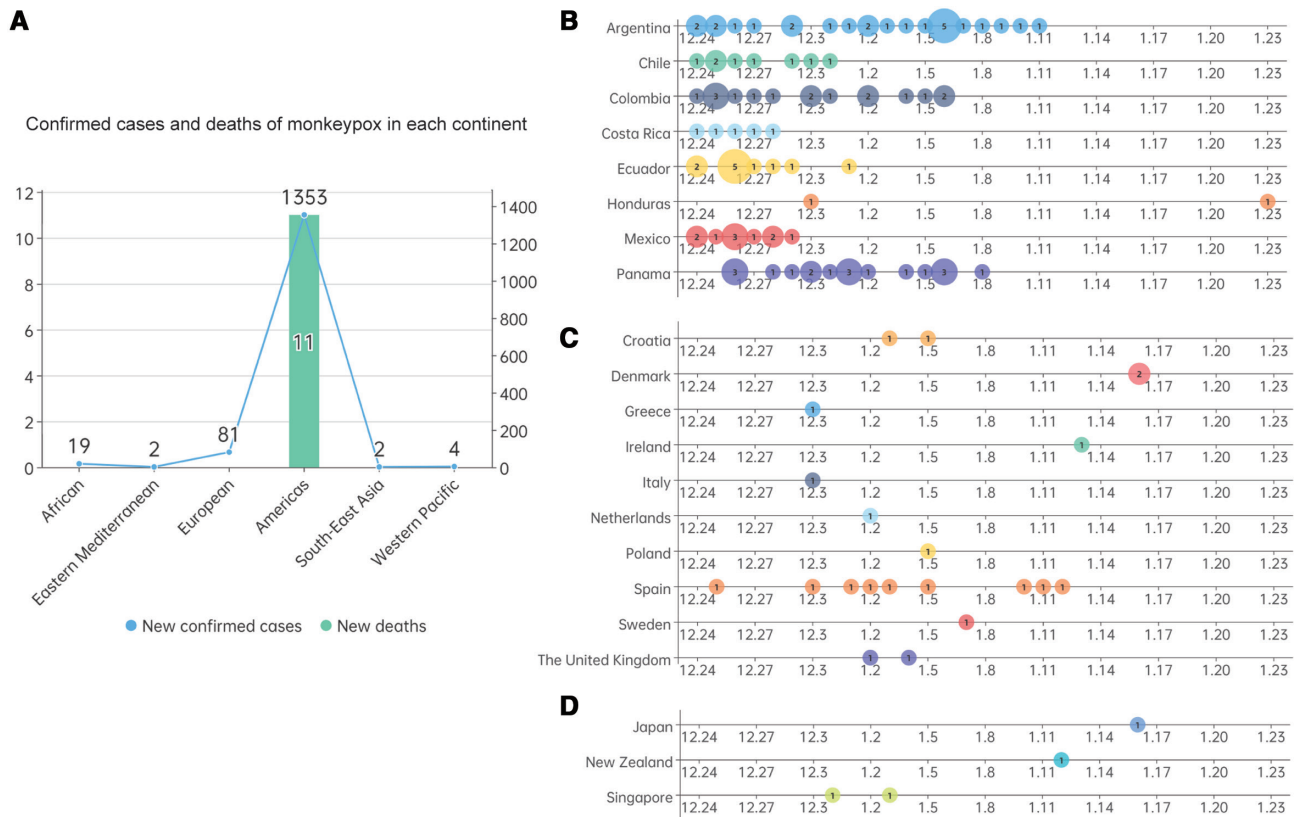
## INFLUENZA

Seasonal influenza is an acute respiratory infection caused by the influenza A and B viruses [5]. It is generally prevalent

from January to March and July to August. According to the U.S. CDC, the 2022–2023 influenza season, in which 16,000–48,000 people have died from influenza, is the worst influenza season since the start of the COVID-19 pandemic. Although influenza activity is currently declining with respect to that in December (Table 4), a second influenza peak may occur in the future, as has been observed in some influenza seasons, according to John Huddleston, a staff scientist at the Bedford Laboratory at the Fred Hutchinson Cancer Center. The epidemic of influenza provides a reminder that COVID-19 is not the only viral disease that must be considered, and that influenza remains a major public health threat.

## CHIKUNGUNYA FEVER

Chikungunya fever, a febrile disease, is caused by chikungunya virus, and is associated with long-term sequelae of arthralgia and myalgia [6]. It is distributed primarily in



**FIGURE 3** | Statistics of new confirmed Mpx cases from December 24, 2022 to January 23, 2023. A: Confirmed Mpx cases and deaths by continent (The primary coordinate on the left is the columnar ordinate, the secondary coordinate on the right is the broken line ordinate). B: Mpx cases confirmed in the regions of the Americas. C: Mpx cases confirmed in the European region. D: Mpx cases confirmed in the Western Pacific region. Data were obtained from the World Health Organization website ([https://worldhealthorg.shinyapps.io/mpx\\_global/#3\\_Detailed\\_case\\_data](https://worldhealthorg.shinyapps.io/mpx_global/#3_Detailed_case_data)).

tropical and subtropical regions where the winter temperature is above 18°C. In the past month, some cases were reported in Malaysia, Peru, Guatemala, Paraguay and Brazil (Table 5). Among them, Paraguay has had a marked increase and high number of cases. The proximity of mosquito breeding sites to human habitation areas is a risk factor for Chikungunya fever; therefore, prevention and control measures should focus on limiting hospitable environments for mosquitoes and removing containers in which mosquitoes breed.

## LEGIONELLOSIS

Legionellosis is a severe respiratory disease found in not only natural habitats, such as freshwater reservoirs, watercourses, moist soil and composted material, but also in man-made water systems, such as plumbing systems, air-conditioning units, bathtubs and showers [7]. Outbreaks of legionellosis have occasionally been reported worldwide (Table 6).

## OTHER INFECTIOUS DISEASES

Beyond those described above, many other infectious diseases have been endemic worldwide in the past month. Detailed data are listed in Table 7, including those for

diphtheria; Salmonella; Leptospira; hepatitis C; rickettsia tsutsugamushi; chickenpox; mumps; Lassa fever; whooping cough; Zika virus; hantavirus; typhoid fever; tuberculosis; West Nile fever; bacillary dysentery; Nipah virus; avian influenza; rift valley fever; amoebic dysentery; meningitis; scarlet fever; melioidosis; hepatitis A; yellow fever; anthrax; pneumococcal infection; norovirus; campylobacteriosis; hand, foot and mouth disease; hepatitis B; Crimean hemorrhagic fever; enterohemorrhagic Escherichia coli; poliomyelitis; and malaria. To avoid pandemics, these endemic diseases must be monitored.

## CONCLUSION

COVID-19 has posed an unprecedented global health crisis since its outbreak in 2019, and the introduction of several vaccines has brought hope to a virus-weary world. However, the continuing emergence of variants of SARS-CoV-2 has prompted a question of whether COVID-19 eradication remains possible, given the limited health care resources and fatigue of the epidemic. This question has no conclusive answer. However, multiple strategies including proper sanitation and hygiene, efficacious vaccines and antiviral drugs would accelerate the elimination process.

**TABLE 1** | Worldwide cholera cases reported between 24/12/2022 and 23/01/2023.

Occurrence	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 1/1/2022	Data source
02/12/2022–08/12/2022	Cameroon	14		WHO Regional Office for Africa
01/01/2022–27/11/2022	Nigeria	20768(498)		WHO Regional Office for Africa
16/10/2022–18/12/2022	Kenya	2959(55)		WHO Regional Office for Africa
01/01/2022–31/12/2022	Bangladesh	170		WHO
01/01/2022–10/12/2022	Philippines	6126(74)		Philippine Department of Health
13/01/2022–18/12/2022	Mozambique	3930(21)		WHO Regional Office for Africa
11/12/2022–17/12/2022	Zimbabwe	31	6342(76)	Philippine Ministry of Health
20/10/2022–28/12/2022	Dominican Republic	10		WHO Regional Office for the Americas
29/10/2022–15/01/2023		9		
18/12/2022–24/12/2022	Afghanistan	2819(1)		WHO Regional Office for the Eastern Mediterranean
25/12/2022–31/12/2022		2782	242562(87)	
01/01/2023–07/01/2023		2940		
26/12/2022–01/01/2023	Haiti	2877(89)		WHO Regional Office for the Americas
01/01/2023–07/01/2023		679(14)		
02/10/2022–14/01/2023		24232(483)		
05/10/2022–28/12/2022	Lebanon	5698(23)		Lebanese Ministry of Public Health
29/12/2022–04/01/2023		173		
05/01/2023–11/01/2023		193		
12/01/2023–18/01/2023		132		
05/12/2022–11/12/2022	Somalia	265	13907(73)	WHO Regional Office for the Eastern Mediterranean
12/12/2022–18/12/2022		544(4)	14824(83)	
26/12/2022–01/01/2023		385(1)	15653(88)	
03/03/2022–18/12/2022	Malawi	13437(398)		WHO Regional Office for Africa
19/12/2022–25/12/2022		1627(72)		
26/12/2022–07/01/2023		5463(217)		
01/01/2022–30/12/2022	Democratic Republic of Congo	14290(262)		WHO Regional Office for Africa
01/01/2023–06/01/2023	Burundi	42		WHO Regional Office for Africa
27/08/2022–13/12/2022	Ethiopia	654(24)		WHO Regional Office for Africa
14/12/2022–19/12/2022		37		
20/12/2022–29/12/2022		119(3)		
25/08/2022–07/01/2023	Syria	77561(100)		U.N. Office for the Coordination of Humanitarian Affairs

In this influenza season, many individuals in America have been affected by influenza, and a second influenza peak is projected to emerge in the near future. The reasons for the rebound in influenza virus might be attributable to the relaxation of public health and social distancing strategies, and low population influenza immunity. Therefore, surveillance of influenza activity is important in the post-COVID-19 era. In contrast, the number of global Mpox infection cases significantly decreased in the past month,

although surveillance systems and routine immunization programs still must be improved to control further spread of Mpox virus.

Mosquito-borne diseases, including dengue, Chikungunya fever and Zika, remain prevalent in tropical and subtropical regions, such as Brazil. Emergence and re-emergence of arboviruses is influenced by climate change factors, including rising temperatures, precipitation and human activity. Human activities involving

**TABLE 2** | Worldwide dengue cases reported between 24/12/2022 and 23/01/2023.

Occurrence	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 1/1/2022	Data source
25/12/2022–31/12/2022	Brazil	2926	2363490(929)	WHO Regional Office for the Americas
11/12/2022–17/12/2022	Zimbabwe	327	220705(722)	Philippine Ministry of Health
12/12/2022–18/12/2022	Vietnam	7350(1)	354282(133)	Outbreak News Today
19/12/2022–25/12/2022		6266	361813(133)	
26/12/2022–01/01/2023		4275	367729(140)	WHO Regional Office for the Western Pacific
11/12/2022–17/12/2022	Malaysia	1950(5)	62060(49)	Malaysian Ministry of Health
25/12/2022–31/12/2022		2024(6)	66102(56)	
01/01/2023–07/01/2023		2219(1)		
18/12/2022–24/12/2022	Singapore	272	31892	Singapore Environment Agency
25/12/2022–31/12/2022		285	32175	
01/01/2023–14/01/2023		563		
11/12/2022–17/12/2022	Cambodia	1654	66531(46)	WHO Regional Office for the Americas
18/12/2022–24/12/2022		1277	67808(47)	
11/12/2022–17/12/2022	Peru	907	71352(80)	WHO Regional Office for the Americas
18/12/2022–24/12/2022		575	71927(82)	
25/12/2022–31/12/2022		924	72851(84)	
25/12/2022–31/12/2022	Colombia	1689	69497(48)	WHO Regional Office for the Americas
18/12/2022–31/12/2022	Mexico	2190	59918(53)	WHO Regional Office for the Americas
11/12/2022–17/12/2022	Nicaragua	2585	93890	WHO Regional Office for the Americas
18/12/2022–24/12/2022		2025	95915	
25/12/2022–31/12/2022		1626	97541	
01/12/2022–31/12/2022	Bangladesh	5024(27)	62382(281)	Outbreak News Today
01/01/2023–15/01/2023		399(3)		Bangladesh Ministry of Health and Family Welfare
16/01/2023–19/01/2023		55(2)		
10/12/2022–16/12/2022	Sri Lanka	1241	61773	Sri Lanka Ministry of Health
31/12/2022–06/01/2023		980		
07/01/2023–13/01/2023		1158		
01/01/2022–31/12/2022	Nepal	54784(88)		Nepal Ministry of Health
01/12/2022–31/12/2022	Thailand	2897(2)		Thailand Ministry of Public Health
11/12/2022–17/12/2022	Venezuela	356	10835(17)	WHO Regional Office for the Americas
25/12/2022–31/12/2022		265		
11/12/2022–17/12/2022	Panama	191	10918(4)	WHO Regional Office for the Americas
25/12/2022–31/12/2022		137		
01/12/2022–05/12/2022	Pakistan	76210(136)		ProMED-mail
11/12/2022–17/12/2022	Bolivia	924	14660(9)	WHO Regional Office for the Americas
04/12/2022–10/12/2022	Philippines	699(1)	216927(693)	Philippine Department of Health

**TABLE 3** | Worldwide measles cases reported between 24/12/2022 and 23/01/2023.

Occurrence	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 1/1/2022	Data source
01/01/2022–28/12/2022	South Sudan	2745(31)		WHO Regional Office for Africa
29/12/2022–31/12/2022		424		
10/04/2022–04/12/2022	Zimbabwe	7720(747)		WHO Regional Office for Africa
05/12/2022–18/12/2022		23		
18/12/2022–24/12/2022	Afghanistan	592(2)	76519(388)	WHO Regional Office for the Eastern Mediterranean
25/12/2022–31/12/2022		675(1)	77210(389)	
01/01/2023–07/01/2023		588(3)		
08/01/2023–14/01/2023		633(2)		
28/11/2022–11/12/2022	Somalia	490	16578(629)	WHO Regional Office for the Eastern Mediterranean
12/12/2022–25/12/2022		515		
01/01/2022–17/12/2022	Brazil	3569		WHO Regional Office for the Americas
18/12/2022–31/12/2022		109		
01/01/2022–17/12/2022	Mexico	2493		WHO Regional Office for the Americas
18/12/2022–31/12/2022		36		
01/01/2022–31/12/2022	Venezuela	1859		WHO Regional Office for the Americas
01/01/2022–31/12/2022	Cuba	1594		WHO Regional Office for the Americas
01/01/2022–17/12/2022	Colombia	1091		WHO Regional Office for the Americas
18/12/2022–31/12/2022		34		
01/01/2022–17/12/2022	Paraguay	575		WHO Regional Office for the Americas
18/12/2022–31/12/2022		77		
01/01/2022–31/12/2022	Niger	14108(32)		WHO Regional Office for Africa
01/01/2022–18/12/2022	Senegal	468(2)		WHO Regional Office for Africa
19/12/2022–01/01/2023		21		
13/06/2022–25/12/2022	Zambia	2137(31)		WHO Regional Office for Africa
01/01/2022–11/01/2023	Nigeria	31846		WHO
11/10/2022–17/12/2022	South Africa	227		WHO Regional Office for Africa
18/12/2022–24/12/2022		70		Outbreak News Today
25/12/2022–14/01/2023		100		
01/01/2022–11/01/2023	Ivory Coast	5993		WHO
01/01/2022–18/12/2022	Ethiopia	13294(76)		WHO Regional Office for Africa
01/01/2022–11/12/2022	Central African republic	1447(3)		WHO Regional Office for Africa
26/06/2022–11/12/2022	Kenya	392(2)		WHO Regional Office for Africa
01/01/2022–11/12/2022	Chad	302611)		WHO Regional Office for Africa
01/01/2022–11/12/2022	Mali	751(1)		WHO Regional Office for Africa
01/01/2022–18/12/2022	Democratic Republic of the Congo	139435(1740)		WHO Regional Office for Africa
01/01/2022–17/12/2022	Chile	285		WHO Regional Office for the Americas
01/01/2022–17/12/2022	Ecuador	248(1)		WHO Regional Office for the Americas

**TABLE 4** | Worldwide influenza cases reported between 24/12/2022 and 23/01/2023.

Occurrence	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 1/1/2022	Data source
28/11/2022–11/12/2022	Australia	1608	230175	Australian Department of Health
03/01/2022–11/12/2022	Netherlands	11403		WHO
03/01/2022–18/12/2022	Iran	12096		WHO
03/01/2022–18/12/2022	Qatar	5964		WHO
25/12/2022–31/12/2022	Canada	2841		Public Health Agency of Canada
01/01/2023–07/01/2023	Zimbabwe	1749		Public Health Agency of Canada
11/12/2022–17/12/2022	U.S.A.	33202		U.S. CDC
18/12/2022–24/12/2022		18816		
25/12/2022–31/12/2022		14027		
01/01/2023–07/01/2023		8281		
01/01/2022–25/12/2022	Malaysia	4867		WHO Regional Office for the Western Pacific
01/01/2022–25/12/2022	Singapore	890		WHO Regional Office for the Western Pacific
01/01/2022–25/12/2022	Laos	629		WHO Regional Office for the Western Pacific
03/01/2022–01/01/2023	France	36430		WHO
03/01/2022–01/01/2023	Denmark	20818		WHO
03/01/2022–08/01/2023	Norway	24665		WHO
03/01/2022–11/12/2022	Spain	14887		WHO
03/01/2022–08/01/2023		17046		

**TABLE 5** | Worldwide chikungunya fever cases reported between 24/12/2022 and 23/01/2023.

Occurrence	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 1/1/2022	Data source
01/01/2022–27/11/2022	Thailand	1109		European Union CDC
01/01/2022–17/12/2022	Bolivia	232		WHO Regional Office for the Americas
01/01/2022–17/12/2022	Brazil	172082(93)		Outbreak News Today
25/12/2022–31/12/2022		339	265289(75)	WHO Regional Office for the Americas
11/12/2022–17/12/2022	Paraguay	696	1997	Paraguay Health Ministry
18/12/2022–24/12/2022		664	2661	
25/12/2022–31/12/2022		1242	3903	
27/11/2022–24/12/2022	Guatemala	133	1933	WHO Regional Office for the Americas
01/01/2022–17/12/2022	Peru	399		WHO Regional Office for the Americas
18/12/2022–24/12/2022		76	475	
25/12/2022–31/12/2022		120	595	
01/01/2022–31/12/2022	Venezuela	189		WHO Regional Office for the Americas
01/01/2022–31/12/2022	El Salvador	154		WHO Regional Office for the Americas
11/12/2022–17/12/2022	Malaysia	22	785	Malaysian Ministry of Health
25/12/2022–31/12/2022		13	814	
01/01/2023–07/01/2023		25		



**TABLE 6** | Worldwide legionellosis cases reported between 24/12/2022 and 23/01/2023.

Occurrence	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 1/1/2022	Data source
11/12/2022–17/12/2022	Taiwan, China	12	349	China Taiwan Disease Control Agency
18/12/2022–24/12/2022		13	362	
25/12/2022–31/12/2022		20	382	
01/01/2023–07/01/2023		11		
01/01/2022–24/12/2022	Hong Kong, China	80		China Hong Kong Centre for Health Protection
01/01/2023–07/01/2023		4		
01/01/2023–07/01/2023	U.S.A.	31		U.S. CDC
12/12/2022–18/12/2022	Japan	20	2085	Japan National Institute of Infectious Diseases
19/12/2022–25/12/2022		17	2106	
02/01/2023–08/01/2023		24		

**TABLE 7** | Worldwide other infectious cases reported between 24/12/2022 and 23/01/2023.

Occurrence	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 01/01/2022	Data source
<b>Diphtheria</b>				
14/12/2022–21/12/2022	Germany	52	116	European Union CDC
12/12/2022–18/12/2022	United Kingdom	5	67	British Health and Safety Authority
25/12/2022–31/12/2022	Bangladesh	9	433(2)	WHO
<b>Salmonella</b>				
11/12/2022–17/12/2022	U.S.A.	262	46542	U.S. CDC
18/12/2022–24/12/2022		205	47234	
25/12/2022–31/12/2022		126	49028	
01/01/2023–07/01/2023		307		
11/12/2022–17/12/2022	Singapore	16	1317	Health Ministry of Singapore
25/12/2022–31/12/2022		28	1368	
07/12/2022–06/01/2023	Sweden	22		Outbreak News Today
<b>Leptospira</b>				
11/12/2022–17/12/2022	Philippines	12	4240(499)	Philippine Ministry of Health
10/12/2022–16/12/2022	Sri Lanka	195	6544	Sri Lanka Ministry of Health
17/12/2022–23/12/2022		163	6766	
31/12/2022–06/01/2023		66		
07/01/2023–13/01/2023		68		
01/01/2022–17/12/2022	Puerto Rico	944(14)		Outbreak News Today
12/2022	Thailand	274(4)	3601(44)	Thailand Ministry of Health
<b>Hepatitis C</b>				
18/12/2022–24/12/2022	Taiwan, China	22	497	China Taiwan Disease Control Agency
25/12/2022–31/12/2022		16	513	
01/01/2023–07/01/2023		13		

**TABLE 7** | (continued)

Occurrence	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 01/01/2022	Data source
25/12/2022–31/12/2022	Korea	147	8396	Korea CDC
01/01/2023–07/01/2023		122		
Rickettsia Tsutsugamushi				
02/01/2023–08/01/2023	Japan	15		Japan National Institute of Infectious Diseases
11/12/2022–17/12/2022	Taiwan, China	8	269	China Taiwan Disease Control Agency
Chickenpox				
18/12/2022–24/12/2022	Korea	377	18386	Korea CDC
25/12/2022–31/12/2022		322	18735	
01/01/2023–07/01/2023		327		
12/2022	Thailand	705	12793	Thailand Ministry of Health
Mumps				
25/12/2022–31/12/2022	Taiwan, China	10	306	China Taiwan Disease Control Agency
25/12/2022–31/12/2022	Singapore	3	168	The Health Ministry of Singapore
2022.12.18–2022.12.24	Korea	139	6345	Korea CDC
08/01/2023–14/01/2023		118		
Lassa Fever				
12/12/2022–18/12/2022	Nigeria	74	7981(183)	Nigeria CDC
26/12/2022–01/01/2023		12	8202(189)	
Whooping Cough				
18/12/2022–24/12/2022	Afghanistan	86(2)		WHO Regional Office for the Eastern Mediterranean
25/12/2022–31/12/2022		21		
01/01/2023–07/01/2023		38		
08/01/2023–14/01/2023		16		
Zika Virus				
01/01/2022–17/12/2022	Bolivia	173		WHO Regional Office for the Americas
01/01/2022–17/12/2022	El Salvador	171		WHO Regional Office for the Americas
04/12/2022–17/12/2022	Brazil	164	32892(4)	WHO Regional Office for the Americas
18/12/2022–24/12/2022	Paraguay	137	785	Paraguay Health Ministry
25/12/2022–31/12/2022		309	1094	
04/12/2022–31/12/2022	Guatemala	32	1717	WHO Regional Office for the Americas
Hantavirus Infections				
01/01/2022–21/12/2022	Panama	36		ProMED-mail
22/12/2022–31/12/2022		3		Outbreak News Today
16/01/2023		1		ProMED-mail

**TABLE 7** | (continued)

Occurrence	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 01/01/2022	Data source
Typhoid Fever				
01/01/2022–10/12/2022	Philippines	15092(62)		Outbreak News Today
11/12/2022–17/12/2022		95	15619(62)	Philippine Ministry of Health
Tuberculosis				
25/12/2022–31/12/2022	Korea	347	16884	Korea CDC
18/12/2022–24/12/2022		384	16611	
01/01/2023–07/01/2023		320		
08/01/2023–14/01/2023		324		
25/12/2022–31/12/2022	U.S.A.	55	5537	U.S. CDC
12/12/2022–18/12/2022	Japan	206	14093	Japan National Institute of Infectious Diseases
19/12/2022–25/12/2022		197		
02/01/2023–08/01/2023		89		
12/2022	Thailand	507	8944(11)	Thailand Ministry of Health
West Nile Fever				
01/01/2022–10/01/2023	U.S.A.	1035(79)		U.S. CDC
Bacillary Dysentery				
11/12/2022–17/12/2022	U.S.A.	80	12786	U.S. CDC
18/12/2022–24/12/2022		70	13043	
25/12/2022–31/12/2022		62	13458	
01/01/2023–07/01/2023		131		
11/11/2022–22/12/2022	Sweden	30		Outbreak News Today
Nipah Virus				
01/01/2023–10/01/2023	Bangladesh	1		Outbreak News Today
Avian Influenza (H5N1)				
10/01/2023	Ecuador	1		Outbreak News Today
Rift Valley Fever				
29/08/2022–25/12/2022	Mauritania	53(24)		WHO Regional Office for Africa
Amoebic Dysentery				
12/2022	Thailand	114	1245	Thailand Ministry of Health
01/01/2012–07/01/2023	Taiwan, China	9		China Taiwan Disease Control Agency
Meningitis				
31/10/2022–21/12/2022	Niger	279(9)		WHO Regional Office for Africa
22/12/2022–01/01/2023		97(3)		
02/06/2022–30/12/2022	Democratic Republic of Congo	165(26)		WHO Regional Office for Africa
Scarlet Fever				
12/12/2022–18/12/2022	United Kingdom	19736		British Health and Safety Authority
19/12/2022–25/12/2022		6350		
02/01/2023–08/01/2023		1452		

**TABLE 7** | (continued)

Occurrence	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 01/01/2022	Data source
Meliodosis				
17/12/2022–23/12/2022	Hong Kong, China	3	46(7)	China Hong Kong Centre for Health Protection
14/01/2023–20/01/2023		1		
Hepatitis A				
08/01/2023–14/01/2023	Korea	20		Korea CDC
Yellow Fever				
28/11/2022–04/12/2022	Cameroon	15		WHO Regional Office for Africa
31/03/2022–29/11/2022	Republic of the Congo	4		WHO Regional Office for Africa
Anthrax				
24/11/2022–22/12/2022	Philippines	12		ProMED-mail
01/01/2022–14/12/2022	Zimbabwe	263		WHO Regional Office for Africa
13/03/2022–04/12/2022	South Sudan	141(5)		WHO Regional Office for Africa
Pneumococcal Infection				
11/12/2022–17/12/2022	U.S.A.	267	13640	U.S. CDC
18/12/2022–24/12/2022		238	14136	
11/12/2022–17/12/2022	Taiwan, China	14	192	China Taiwan Disease Control Agency
18/12/2022–24/12/2022		10	202	
Norovirus				
15/12/2022–20/12/2022	U.S.A.	298		U.S. CDC
Campylobacteriosis				
11/12/2022–17/12/2022	Singapore	6	563	Singapore Ministry of Health
Hand, Foot, and Mouth Disease				
12/2022	Thailand	2753	98982	Thailand Ministry of Health
Hepatitis B				
12/2022	Thailand	266	5304	Thailand Ministry of Health
Crimean Hemorrhagic Fever				
12/07/2022–13/12/2022	Uganda	6(2)		WHO Regional Office for Africa
01/01/2022–24/12/2022	Afghanistan	388(15)		WHO Regional Office for the Eastern Mediterranean
01/01/2022–25/12/2022	Iraq	1360(114)		WHO Regional Office for the Eastern Mediterranean
Enterohemorrhagic Escherichia coli				
12/12/2022–18/12/2022	Japan	43	3272	Japan National Institute of Infectious Diseases
19/12/2022–25/12/2022		45	3330	
Poliomyelitis				
21/12/2022–27/12/2022	Democratic Republic of the Congo	1(cVDPV1)		Global Poliomyelitis Network
28/12/2022–03/01/2023		2(cVDPV1)/11(cVDPV2)		
04/01/2023–10/01/2023		17(cVDPV1)/15(cVDPV2)		
14/12/2022–20/12/2022	Sudan	1(cVDPV2)		Global Poliomyelitis Network

**TABLE 7** | (continued)

Occurrence	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 01/01/2022	Data source
14/12/2022–20/12/2022	Yemen	1(cVDPV2)		Global Poliomyelitis Network
21/12/2022–27/12/2022	Chad	3(cVDPV2)		Global Poliomyelitis Network
21/12/2022–27/12/2022	Cameroon	1(cVDPV2)		Global Poliomyelitis Network
28/12/2022–03/01/2023	Algeria	1(cVDPV2)		Global Poliomyelitis Network
28/12/2022–03/01/2023	Central African Republic	1(cVDPV2)		Global Poliomyelitis Network
Malaria				
01/01/2022–25/12/2022	Sudan	1649627(113)		WHO Regional Office for the Eastern Mediterranean
01/09/2022–25/12/2022	Pakistan	777226		WHO Regional Office for the Eastern Mediterranean
01/01/2022–11/12/2022	Zimbabwe	273297		WHO Regional Office for the Eastern Mediterranean
01/01/2022–31/12/2022	Bangladesh	53776		WHO

travel, urbanization, deforestation and reforestation affect virus–mosquito–primate host interactions, and consequently viral transmission in both domestic and wild environments. Thus, efficient prevention of arboviral disease outbreaks must include mosquito control strategies that interrupt human–vector contact.

Overall, the outbreaks of multiple infectious diseases occurred primarily in the regions of Africa, South America and Southeast Asia, given their geographical locations and climatic conditions. The public health infrastructure and response efficiency of individual countries may determine outbreak severity. Therefore, governments and public health authorities must adopt comprehensive and effective strategies tailored to local epidemics, to mitigate or even eliminate the threats caused by infectious diseases.

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