

THE CURRENT EPIDEMIOLOGICAL ANALYSIS AND MEASURES TAKEN BY THE REPUBLIC OF POLAND TO COMBAT DEADLY INFECTIOUS CORONA VIRUS DISEASE

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Purpose: This article aims to provide an overview of the current situation of COVID-19 in the Republic of Poland, including the measures taken by the government to combat and prevent the virus epidemic.

Methodology: The authors conducted a review of available literature and data sources related to the COVID-19 situation in Poland. Information was gathered from official government websites, academic journals, news articles, and other relevant sources.

Findings: Poland is actively taking steps to combat the COVID-19 pandemic, including enhancing testing facilities, increasing the budget for infectious hospitalization, initiating a national immunization program, and implementing strict regulatory measures against SARS-CoV-2. However, despite these efforts, the country is currently facing a surge in cases due to the emergence of the Omicron variant.

Practical implications: The information presented in this article can be useful for policymakers, healthcare professionals, and the general public in understanding the current COVID-19 situation in Poland and the measures being taken to combat the virus. This knowledge can help inform decisions related to public health policies and individual behaviors to prevent the spread of COVID-19.

Originality: While there are many articles available on the COVID-19 pandemic, this article specifically focuses on the situation in the Republic of Poland, providing a detailed overview of the measures being taken by the government and the available facilities to the public. This article also highlights the impact of the Omicron variant on Poland, which is a current and rapidly evolving situation

Keywords: Corona Virus, Pandemic, Preventing Measures, Republic of Poland, Current updates.

1. Introduction

The abrupt increase of severe pneumonia cases reported by health official in city Wuhan province Hubei, that leads to global pandemic in late December 2019 (Dietz et al., 2020). The Chinese Centre for Disease Control and Prevention (CDC) immediately sent researcher squad to Wuhan and also informed world health organization (WHO) (Wu et al., 2020). In the first week of January this infection was identified as novel corona virus of 2019 (nCovid-19) and closely related to severe acute respiratory syndrome (SARS-CoV) and middle east respiratory syndrome (MERS-CoV) (SSMJ Team, 2021). The WHO announced another sixth Public Health Emergency on 30 January 2020 and a global pandemic on 11 March 2020. According to the report by Johns Hopkins university (JHU) Covid-19 Dashboard Centre for system science and engineering (CSSE) on 21 January 2022, 346M (+3.88M) cases of covid infection and more than 5.59M (+10,163) deaths have been reported yet to WHO (CSSE 2022). According to WHO Coronavirus (COVID-19) dashboard the global mortalities are going to be robust due to covid 19 variants. In Americas 2,460,897, Europe 1,735,102, South-East Asia 729,368, Eastern Mediterranean 319,005, Western pacific 163,903 and in Africa 161,875 deaths are reported weakly. Figure 1 indicates that America and Europe have the highest mortalities rate in the world from December 2019 to January 2022 (WHO Covid dashboard, 2023).

On 24th January 2020 France was the first European union country that identified three cases of nCovid-19 in Paris and one in Bordeaux (Stoecklin, S. B 2020). The First case in Poland "Pierwszy przypadek koronawirusa w Polsce" Ministry of Health in Poland become alert, made a strict rules for entering in Poland. Lubusz Voivodeship on 4th March 2020 confirmed the first case of nCovid-19 in his hospital Zielona Góra later Prof. Łukasz Szumowski, the health minister re-confirmed in his Press conference (Polish Ministry of Health, 2023). Inside about fourteen days of the first laboratory- confirmed COVID-19 case, Poland had carried out numerous far- reaching general steps, such as public awareness, prevention, mediations to moderate the early spread of nCoV-19, including shutting borders, forbidding mass occasions, limiting trade exchange, closing educational departments, introducing several health relief (Pinkas, 2020). The polish government announced the lock down on 31 March 2020 and made regulations to control the pandemic transmission. Every possible measures were taken to stop public gathering (Rozporządzenie Rady Ministrów..., 2020). The Polish Border Guards Head Quarter (HQ) monitoring every passenger travelling to Poland within European and non-European continents and providing special forms and app for registering to locate the person, during the current outbreak of corona virus. The polish embassies around the world and polish border guard marinating strict rules to entry to Poland and staying in the territory of the republic of Poland (Polish Boarder HQ, 2022).

The present study presents an early and current epidemiological investigation of COVID-19 epidemic and measures taken to control the pandemic in the republic of Poland.

2. The current status of Covid-19 pandemic in Poland

This investigation was in view of information from epidemiological reports composed between 4, March 2020 to 21 January 2022, by the Chief Sanitary Inspector of Polish government from 16 provinces.

According to the Polish Ministry of Health, republic of Poland, there are total of 4,443,217 cases of corona virus reported, in which 103,626 cases of death, and 3,823,409 number of patients recovered from this disease. Table 1 data was calculated from the day, when the first case reported in Poland 4th, March 2020 to 21, January, 2022 (Polish Ministry of health news, 2022). According to the global change data lab (The Oxford Martin programme on Global development), The current fatalities rate is 3.33%, the effective reproduction rate is 1.39, the omicron variant share is 37.15% in Poland. The comparison of new infection rate and mortalities rate between Poland, Europe and world has been recorded in the Figure 2. It shows that rate of daily new cases are robust, then comparison to world-wide cases. The rate of positive infections in Poland are low as compared to other European union countries. The death rate of daily death among covid patient is higher in Poland than world-wide and other European countries. The second and third graph it can be seen Polish population is highly effected in the early variant wave of covid during March 2020, the current wave is not vigorous due to prevention measurements in the country. In the fourth of graph, it was revealed that new cases of infection and positive test rate of omicron variant, and reproduction rate of previous variants are continuously increasing in Poland (Our World in Data, 2022).

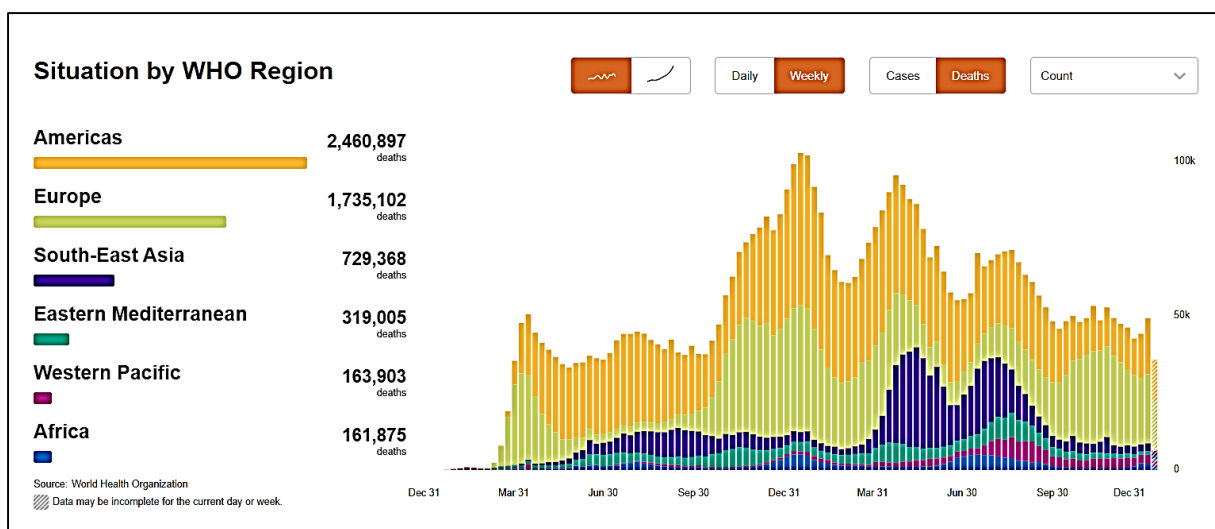


Figure 1. The current Mortalities rate in the world.

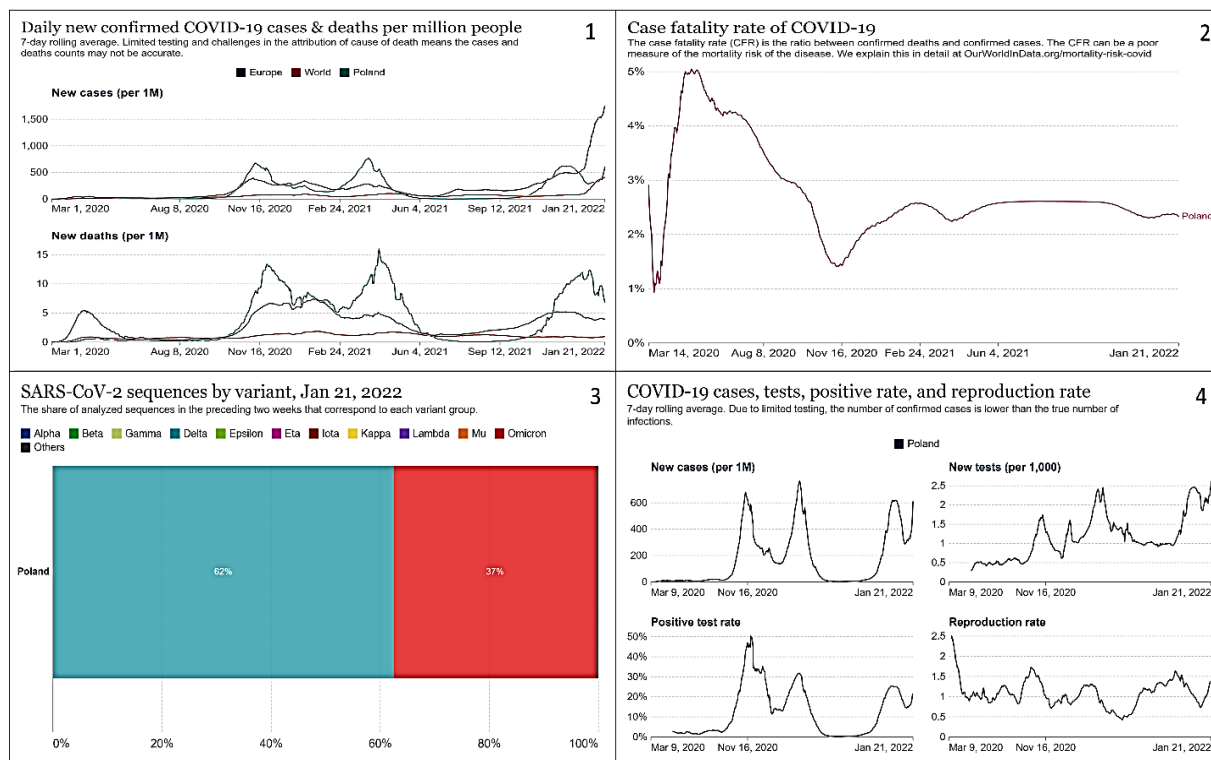


Figure 2. The comparison on Infection and fatalities among Poland, Europe, World, and the effects of covid-19 on republic of Poland.

Table 1.

The overall Coronavirus infection report (SARS-CoV-2) in Poland

People Infected	Fatal Cases	Recovered
4,443,217	103,626	3,823,409

Table 2.

The Daily Statistic of Coronavirus infection (SARS-CoV-2) in Poland

Infected Persons	36,665
Recovered Persons	17,493
Fatal Person	248
Solely because of COVID-19	67
Comorbidities with COVID-19	181
People in quarantine	747,290
Tests performed	135,321
Tests with positive result	42,424
Orders for POZ tests	46,437

Table 3.

The Daily statistic of Coronavirus infection (SARS-CoV-2) in voivodships

Name of voivodships	Population	Daily Confirmed	Daily Fatal
Opole	986,506	699	12
Świętokrzyskie	1,241,546	715	9
Kuyavian-Pomeranian	2,077,775	1,158	10
Masovian	5,403,412	6,227*	37*
Pomeranian	2,333,523	2,251	4
Silesian	4,533,565	5,923	19

Cont. table 3.

Warmian-Masurian	1,428,983	1,138	12
The West Pomeranian	1,701,030	1,410	14
Lower Silesian	2,901,225	3,203	13
Greater Poland Voivodeship	3,493,969	2,587	23
Lodz	2,466,322	1,765	22
Podlaskie	1,181,533	585	7
Lesser Poland Voivodeship	3,400,577	4,207	27
Lubusz Voivodeship	1,014,548	514	9
Podkarpackie	2,129,015	2,403	20
Lublin	2,117,619	1,697	10

The data calculated in Table 2 and Table 3 bases on the latest updates for January 21, 2022. The Polish Ministry of the daily statistics of COVID-19, shows that daily infected cases are 36,665. In which 67 confirmed deaths due to COVID-19 and recovered persons are 17,493. Table 3 indicates, Masovian voivodships has highest number of daily confirmed new positive and death cases. The Masovian, Silesian, and Lesser Poland Voivodeship are effected more in omicron 5th wave, as confirmed cases are continuously increasing. Table 4 analyse the detailed view of the current omicron scenario in Poland. The confirmed deaths of 15 patients from Lesser Poland Voivodeship, 10 patients from Greater Poland Voivodeship, 9 patients from Masovian, while 7 patients from lower Silesian region have been reported. Masovian and Silesian region have 147,861, and 115,385, highest number of peoples in quarantine. The further parameters, daily tests performed in every voivodships, their results with positive and negative figures, special tests recommended by family doctors, number of test remaining and cases recovering from COVID are mentioned in Table 4.

The above data was recorded until 21ST January. 2022, 10:29 pm. The total infection were calculated from 4th March 2020. Here POZ tests indicates, test recommended by family doctors owing to mild and severe symptoms of COVID 19. While calculating data the following methodology were take under-consideration (Public announcement, 2022).

Table 4.

The Detailed statistic of Coronavirus infection Polish voivodships

Serial Number	Name of voivodships	Confirmed at 10,000 Resident	Fatalities due to Covid	Comorbidities with Covid-19	People in quarantine	Tests performed	Tests with positive result	Tests with Negative result	Orders for POZ tests	Number of Test Remaining	Number of Convalescence
1.	O	7.13	3	9	21,052	2,659	827	1,798	1,190	34	459
2.	S	5.81	1	8	9,862	2,870	839	1,986	906	45	369
3.	KP	5.6	1	9	18,039	5,392	1,382	3,946	1,963	64	664
4.	M	11.47	9	28	147,861	24,228	7,117	16,637	6,591	474	2,821
5.	P	9.59	0	4	63,524	8,334	2,635	5,474	3,321	225	1,126
6.	S	13.14	3	16	115,385	17,280	6,867	10,133	7,936	280	2,127
7.	WM	8.01	6	6	25,698	5,343	1,362	3,923	1,621	58	510

Cont. table 4.

8.	TWP	8.33	0	14	29,846	6,186	1,665	4,435	2,173	86	725
9.	LS	11.05	7	6	63,288	9,990	3,643	6,134	3,629	213	1,529
10.	GPV	7.39	10	13	44,547	9,372	2,964	6,297	3,354	111	1,417
11.	L	7.21	2	20	46,259	8,174	2,084	6,005	2,800	85	785
12.	P	4.97	1	6	16,809	2,994	704	2,265	1,127	25	309
13.	LPV	12.32	15*	12	53,131	12,389	4,808	7,301	3,859	280	2,467
14.	LV	5.09	6	3	9,571	2,444	586	1,820	821	38	345
15.	P	11.3	1	19	48,052	7,793	2,787	4,986	2,559	20	1,013
16.	L	8.07	2	8	34,206	7,366	1,955	5,373	2,522	38	765

1. Opole, 2. Świętokrzyskie, 3. Kuyavian-Pomeranian, 4. Masovian, 5. Pomeranian, 6. Silesian, 7. Warmian-Masurian, 8. The West Pomeranian, 9. Lower Silesian, 10. Greater Poland Voivodeship, 11. Lodz, 12. Podlaskie, 13. Lesser Poland Voivodeship, 14. Lubusz Voivodeship, 15. Podkarpackie, 16. Lublin.

Methodology while recording data

1. Daily number of infected = number of people with positive results reported by laboratories to the EWP system during the last day (people with a unique PESEL number) EWP is electronic logging platform for health care.
2. Corrections - in the reporting system, in individual cases, the results may change retroactively as a result of the introduced corrections. Corrections may also apply to address data or personal data. Therefore, the global number of cases will be recalculated for each day, and the change in this value in a specific time period may not be equal to the sum of all new cases reported on each day of that period.
3. Positive results of antigen and commercial tests are included in the presented data on an ongoing basis.
4. The deaths take into account both the death of an individual from COVID-19 alone and the coexistence of COVID-19 with other diseases. In individual cases, after medical verification or re-reporting, the cause of death of a given person may be changed.
5. In the daily reports, there are cases of reporting a positive result without being assigned to a specific voivodeship and powiat, due to the lack of the patient's address on the laboratory side. The indicated patients will be assigned to voivodships and powiats by sanitary and epidemiological stations.

3. Services Provided by republic of Poland

The republic of Poland, taking every measure to control the pandemic, from the first day, when first case was reported in Poland. The government started easy steps for covid testing. Presently, there are 91 infectious hospitals (List of Infectious hospitals, 2022), 831 social welfare homes for corona relief (Social welfare homes, 2022), and 221 laboratories list of laboratories in Poland, (2022), that are working on daily bases for testing within the country. These formation of these special laboratories in overall Poland was completed on 26th October,

2020. The detail numbers are presented in the Table 5, while the further details are mentioned in the reference.

National Health Foundation (NFZ), has started telephone patient consultation in every province, and provided special hotline number 24/7 helpline (NFZ News, 2022). Thanks to the program, people over the age of 70 will get the help they need in a pandemic without leaving home. All you need to do is contact a dedicated hotline. Support in the form of e.g. necessary products will be delivered to the retirement home. It is solidarity corps for supporting senior, with slogan “Together we will defeat the corona-virus” (Solidarity corps, 2022).

Government of Poland started two mobile applications, home quarantine (App quarantine, 2022) and stop covid - ProteGo Safe (ProteGO Safe, 2022). The first one is an application that facilitates and streamlines the performance of mandatory home quarantine. The second is our attitude determines how quickly we return to normal life. By using this application polish people can speed it up with slogan Let's act together. To protect the mental health of patient, a psychological service was started to help the mental health in quarantine, mental health protection of children and adolescents, and people experiencing mental disorders or addictions (Ministry of Health and the National Health Fund: News Section, 2021, 2022).

Government started national immunization program in the Poland. The main objective for the programme safe and effective, accessible supply of vaccine to public. The person can get vaccine by electronic referral from doctor, or registering himself for voluntary vaccination (Immunization program, 2022). Presently, 57.10% polish population are fully vaccinated against covid (Legal Act, 2022).

4. The current rules in the republic of Poland

The government announced new restriction for public safety, which includes, social distancing 1.5 meter distance for pedestrian, wearing mask in public, 7 days compulsory quarantine, Covid digital Eu certificate with negative PT-PCR test requirement for all of those crossing European or non-European boarder while entering in Poland territory. There is strict regulation in culture and entertainment, care and education, international boarder and movements, services, trades, sports and recreation, sanatoriums, health resorts, rehabilitation public transport and religious celebrations. In the meanwhile government is allowing these activities for a maximum of 30%. occupancy. But if anyone is vaccinated against covid or recovered from covid or having Eu digital covid certificate this occupancy limit is not applicable on those gatherings (Ministry of Health and the National Health Fund: News Section, 2021).

Table 5.*The Current Number of laboratories, and hospital in provinces*

Name of voivodships	Number of Covid Laboratories	Infectious Hospitals
Opole	5	3
Świętokrzyskie	10	5
Kuyavian-Pomeranian	13	4
Masovian	31	10
Pomeranian	14	5
Silesian	24	7
Warmian-Masurian	10	5
The West Pomeranian	10	3
Lower Silesian	16	4
Greater Poland Voivodeship	24	5
Lodz	13	5
Podlaskie	8	8
Lesser Poland Voivodeship	16	10
Lubusz Voivodeship	3	2
Podkarpackie	10	7
Lublin	14	8

5. Latest Updates

On January 20, 2022, the Polish health minister announced, free COVID testing at public pharmacies, shorten the quarantine requirements to 7 days, special intensive aid for old citizens, enhanced the bed space in hospitals for COVID, assign 95 medical emergency teams, and increase the budget for other expenditure or necessary tool to fight against COVID (Polish ministry of health, 2022).

6. Conclusion and Discussion

The COVID-19 pandemic has generated a vast amount of new knowledge in several fields, including virology, epidemiology, public health, and healthcare. Some of the key lessons learned from the COVID-19 pandemic are:

Importance of preparedness: The pandemic has highlighted the importance of preparedness in the face of emerging infectious diseases. Countries need to be better prepared with adequate healthcare infrastructure, equipment, and medical supplies to manage future pandemics.

Need for effective communication: The COVID-19 pandemic has emphasized the importance of effective communication in controlling outbreaks. Clear and concise messaging

can help people understand the risks, and motivate them to take the necessary precautions to prevent the spread of the virus.

Importance of public health measures: The pandemic has demonstrated that public health measures such as hand hygiene, social distancing, and the use of masks can be effective in controlling the spread of the virus.

Importance of global collaboration: The pandemic has highlighted the need for global collaboration in managing emerging infectious diseases. Countries need to work together to share information, resources, and expertise to control the spread of the virus.

Need for equitable vaccine distribution: The COVID-19 pandemic has brought to light the importance of equitable distribution of vaccines, particularly in low-income countries. Ensuring that everyone has access to vaccines is critical in controlling the spread of the virus and ending the pandemic.

Long-term effects of COVID-19: The pandemic has also highlighted the potential long-term effects of COVID-19, including the development of long COVID, a condition where people experience persistent symptoms long after the initial infection. Overall, the COVID-19 pandemic has underscored the importance of global collaboration, preparedness, effective communication, and the need for equitable access to healthcare resources, including vaccines. These lessons learned can help us better prepare for future pandemics and address ongoing health challenges.

The COVID-19 pandemic has had a significant impact on Poland, with over 3 million confirmed cases and more than 70,000 deaths. In response, the Polish government has implemented several measures to slow the spread of the virus. These measures include mandatory mask-wearing in public spaces, social distancing requirements, and restrictions on public gatherings. Furthermore, the government has launched a national vaccination campaign to immunize the population against COVID-19. As of March 2023, over 70% of the Polish population has received at least one dose of the vaccine. The government's efforts have resulted in a decline in new cases and deaths. However, the situation remains fluid, and the government continues to monitor the situation closely and adapt its measures accordingly.

6.1. Importance of the research

This communication highlights the measures taken by the Polish government to control the spread of COVID-19 in the country. This information is crucial in understanding the effectiveness of various public health interventions in controlling the pandemic.

Furthermore, this short communication provides insight into the impact of vaccination campaigns in reducing the number of COVID-19 cases and deaths. This information can be used to inform and guide vaccination strategies in other countries facing similar challenges. Overall, the current study will contribute to the growing body of knowledge on COVID-19, and it highlights the importance of evidence-based public health interventions in controlling the spread of the virus.

6.2. Further use of the obtained information

The information obtained from the current studies can be further used to guide policy decisions and public health interventions in Poland and other countries facing similar challenges. The insights on the impact of vaccination campaigns, for instance, can be used to inform vaccine distribution strategies and optimize vaccine uptake. Additionally, this short communication can serve as a reference for researchers and policymakers seeking to understand the effectiveness of various public health interventions in controlling the spread of COVID-19. The information can also be used to develop and refine models for predicting the spread of the virus and identifying potential intervention strategies.

Author credit statement

Ayesha Amjad: Conceptualization, Methodology, Writing - original draft, Writing - review & editing. Formal analysis, Methodology.

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