

The response of Italy and Vietnam to the COVID-19 pandemic: analysis of two international experiences with the first wave of the disease

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Abstract *Several studies on the fight against COVID-19 have been developed in various countries. However, there are few studies that compare cases corresponding to the first wave of the epidemic in a close period and with different responses and outcomes. Therefore, an integrative review was conducted to analyze the experiences of Italy and Vietnam in dealing with the COVID-19 pandemic during the first wave of the disease, seeking to identify the contributions of the health and surveillance systems as well as the specificities of the measures adopted in each country. Common databases were used and the empirical material related to publications was supplemented with documents from the official websites of both countries. The results of this study show that Vietnam and Italy adopted different strategies to deal with COVID-19, containment and mitigation, respectively, with specific measures that made a difference in the number of cases and deaths in each country.*

Key words *Health System, COVID-19, Health surveillance*

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Introduction

The emergence of the COVID-19 pandemic¹ posed global challenges for countries and their health systems³. Studies analyzing the response of countries point to mixed results in terms of epidemic management³, health service preparedness⁴, hospital care organization⁵, the use of primary health care⁶, and learning from previous epidemics³.

The literature on responses to COVID-19 in the first phase of the pandemic shows successful performance by Vietnam⁷⁻⁹, which, together with South Korea³, had a lower number of cases and deaths. On the other hand, they point to Italy as an unsuccessful case¹⁰.

A study analyzing the initial responses to COVID-19 among Western and East Asian countries notes that the priority given in the health systems of many Western countries to hospital management of chronic non-communicable diseases, without strengthening their prevention and control capacities and their territorial surveillance systems, would be a possible explanation for the country's success or failure¹¹. It is also known that the performance of a robust health surveillance system, such as that of South Korea, was fundamental to the definition of strategic actions in line with the epidemiological situation³.

Investigating specific factors and possible contributions of health and surveillance systems in the cases of Vietnam and Italy during the first wave of the pandemic¹², experienced simultaneously, can indicate aspects related to the success or failure of these experiences and signal pathways for future epidemics, considering that both countries have different situations in later waves¹².

This paper aims to analyze the experiences of Italy and Vietnam in coping with the COVID-19 pandemic during the first wave of the disease, seeking to understand the specificities of the measures adopted in each country that led to very different outcomes and to elucidate the contributions of the health and surveillance systems.

Methodology

An integrative review was developed, adapted from the proposal of Whittemore and Knaff¹³, taking as its object the response of Vietnam and Italy to the COVID-19 pandemic, as cases of success and failure, respectively, in the first wave of the pandemic. A search was conducted until July

31, 2021 to identify articles that addressed the response of the health and surveillance systems or the evolution of the epidemic in each country.

The search was performed using the Capes Journal Portal (<https://www.periodicos.capes.gov.br/>), which provided access to the PubMed Central (PMC), Science Direct, Scopus and Web of Science databases. Combined descriptors associated with the terms "COVID-19" and "country names" (Table 1) in titles, abstracts and keywords were used. Manuscripts selected through manual searches that appeared in the references of the articles were also included, where appropriate, as well as documents available in the COVID-19 surveillance databases of the two countries, available at: <http://www.salute.gov.it/portale/nuovocoronavirus/homeNuovoCoronavirus.jsp> for Italy and https://moh.gov.vn/vi_VN for Vietnam. In the case of Italy, the report of the European Observatory – Observatory on Health System and Policies – on the Italian health system (HIT) was also included. For both countries, data were drawn from Our World in Data (<https://ourworldindata.org/>) and the OECD website (<https://www.oecd.org/>).

A total of 93 and 830 articles were identified for Vietnam and Italy, respectively, which were imported into the Mendeley software. After excluding duplicate articles, the database was processed in the Intelligent Systematic Review (Rayyan) review management software, and the final selection of articles was carried out by two researchers. After this process, 26 articles from Vietnam and 71 from Italy were selected for full reading (Figure 1). After the selection, extracted data were recorded in matrices containing the year, title of the article, authors, journals and main findings regarding the measures adopted in each country.

The analysis considered: (i) the characteristics of the country, state/government, and health system; (ii) the measures adopted by the two countries; and (iii) the contributions of the respective health and surveillance systems.

Results

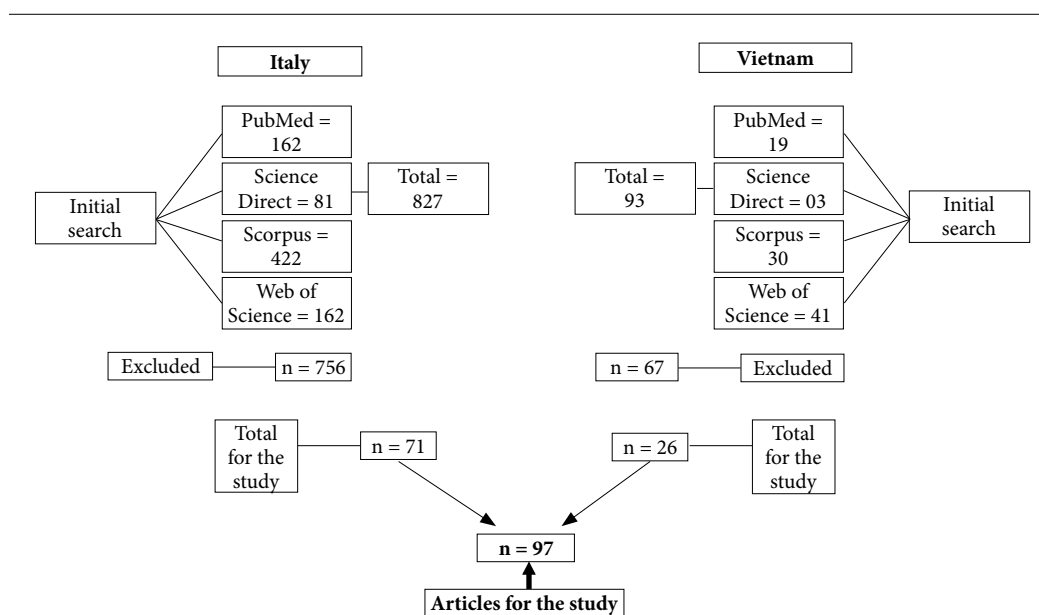
Characteristics of the countries, states, governments and their health care systems

The Socialist Republic of Vietnam, unified by an armed conflict in 1975, was reformed in 1988, introducing market liberalization and allowing private property in the country, regulated by the

Chart 1. Number of articles according to databases searched.

Database	Combinations	Total articles Italy	Total articles Vietnam
PUBMED	"Italy" AND "Covid-19" AND "Surveillance"	97	7
	"Italy" AND "Covid-19" AND "Health System"	67	7
	"Italy" AND "Covid-19" AND "National Response".	01	5
Science Direct	"Italy" AND "Covid-19" AND "Surveillance"	40	1
	"Italy" AND "Covid-19" AND "Health System"	41	2
	"Italy" AND "Covid-19" AND "National Response".	0	0
Scopus	"Italy" AND "Covid-19" AND "Surveillance"	236	18
	"Italy" AND "Covid-19" AND "Health System"	182	9
	"Italy" AND "Covid-19" AND "National Response".	4	3
Web of Science	"Italy" AND "Covid-19" AND "Surveillance"	94	15
	"Italy" AND "Covid-19" AND "Health System"	67	12
	"Italy" AND "Covid-19" AND "National Response".	01	14
Total excluding duplicates		830	93

Source: Authors.

**Figure 1.** Organizational chart for the search and selection of articles on the response to the COVID-19 pandemic in Italy and Vietnam (January 2020 to June 2021).

Source: The authors.

State¹⁴. Currently, the country still has high levels of social inequality¹⁵ and a complex health situation, although social indicators have improved in recent decades¹⁴.

The country has a tripartite power structure, consisting of the party, the people and the state,

and is governed by a single party, the Party of the Socialist Republic. The administrative structure is composed of four levels: national, provincial, district and commune, the latter being governed by an elected People's Council¹⁴. The health system is managed according that this structure

(central, provincial, district and commune). The Ministry of Health is responsible for the National Health Policy, which guides the actions of the other administrative regions.

There is universal public insurance¹⁴ covering 89.2% of the population¹⁵. The private sector is present in the provision of services, especially at the specialized outpatient and hospital level, under state regulation, although the provision of care is mostly public. Community health centers (CHS) provide primary care and refer users to inter-community clinics and hospitals when necessary^{14,16}. The hospital structure has national, district and provincial hospitals, with roles defined at each level and the national hospitals being responsible for training the workforce at the other levels¹⁴. This workforce includes assistant professionals who have completed half of their professional training and are authorized to work in primary care, such as doctors and nurses¹⁴⁻¹⁶.

A recent reform, called the Adaptive Model, implemented in 2015, structured health units from the district to the provincial level into Centers for Disease Control (CDC)¹⁶, with the aim of implementing a patient-centered model of care that articulates health care and surveillance. As a result, it promoted improvements in health facilities, patients' freedom to choose services, and the organization of hospital care.

The General Department of Preventive Medicine (GDPM), an agency of the MoH, formulates public health policy and the strategic direction of related activities, including surveillance¹⁷. In 2013, the National Public Health Emergency Operation Center (PHEOC), linked to the GDPM, was established to manage risk assessment and response to emergency threats. The country has a Regional Public Health Institute in the four health administrative regions, which is responsible for technical guidance and oversight of disease and outbreak surveillance and response in the region. Provincial disease control centers lead activities in the provinces and district centers at the district level. At the commune level, community centers provide basic services such as family planning, immunization and health education.

Italy, in turn, is a capitalist country with a social protection system anchored in social security, with a universal health care system funded through taxes¹⁸. The country experienced an expansion of the welfare state between the 1980s and 1990s, and from then on it has developed a series of reforms, including the health system, which has resulted in a reduction of infrastructure, staff and the number of facilities, clinical beds and, above all, ICUs^{18,19}.

The *Servizio Sanitario Nazionale* (SSN) is organized through 20 health regions, in a decentralized and hierarchical system, with well-defined inter-federative relationships, giving relative autonomy to the health regions, both in the definition of health policy priorities and in the organization of the regional and local health systems. The literature points to disparities in the configuration of services in regional health systems, with the best structure located in the north^{19,20}.

In the health regions, there are local health systems – *Aziende Sanitarie Locali* (ASL) – managed by local health authorities defined on a territorial basis and aimed at developing community-based public health actions. They focus on primary health care (PHC) for the direct provision of health actions and services, with the general practitioner (GP) as the coordinator of care in PHC. It should be emphasized that the provision of services occurs through a mix of public and private providers, with differences in the form of contracting and management of private providers¹⁸.

The National Center for Disease Prevention and Control, established in 2004, conducts surveillance, prevention, and health emergency response actions, supports regional teams, and maintains relationships with international epidemiology and public health networks. This center is responsible for risk assessment and management related to communicable diseases and bioterrorism. In the ASL, there are Prevention Departments, which are operational units responsible for public health actions²¹. Table 2 summarizes information on the two cases investigated.

Response to the pandemic

Vietnam

The first wave of the epidemic in Vietnam was characterized by a low number of cases (268 cases, including 100 by community transmission) and no recorded deaths from the disease²², with only isolated clusters and control of the spread of the disease. Several factors contributed to the success of this response, including the adoption of the pandemic containment strategy, a low-cost model, and a multisectoral, intersectoral, and planned approach^{16,22,23}.

Before the first case appeared, the Vietnamese government set up a Prevention and Control Working Group consisting of 23 ministries, committees, the press, and radio and television representatives⁷ and coordinated by the Deputy Prime Minister. The government acted in the ear-

Chart 2. Characteristics of the cases investigated.

Topics	Vietnam	Italy
Population	98,169,000 inhabitants	61,000,000 inhabitants
State and government	Socialist Republic with a central government, only five municipalities and 58 provinces, and an associated structure of more than 10,000 communes, each governed by an elected People's Council.	Unitary parliamentary republic. It has 20 provinces with well-defined local governments and relative autonomy in political and administrative decisions.
Social protection and health system	Public social insurance (Bismarkian), financed by the population, employers and the state.	Universal (Beverigian) system, financed by taxes and contributions.
Health spending as a percentage of GDP	3.85% of GDP	9.2% of GDP
Gini index	0.422	0.333
Life expectancy	71.40 men and 79.61 women.	79.4 men and 84.5 women.
Morbidity and mortality profile	Persistence of poverty-related diseases such as malnutrition, high maternal and infant mortality rates (46 per 1000 and 20.14 per 1000, respectively), and a lack of health determinants such as sanitation and drinking water. Coexistence of infectious diseases and diseases of modernity.	The morbidity and mortality profile is consistent with that of developed countries, with a predominance of circulatory system problems.
Infrastructure (number of beds)	3.0 beds per 1000 inhabitants.	3.4 beds per 1000 inhabitants.
Funding of the health system	The main source is the state itself (3.85% of GDP), supplemented by 5% and 15% from employees and employers, respectively.	Funded by taxes and contributions. This is supplemented by co-payments from its users, mainly for pharmaceuticals and specialized outpatient services.
Resources secured for disasters / public health emergencies	It has a guaranteed budget to deal with disasters.	It has no budget for disasters and public health emergencies.

Sources: Cộng Hòa Xã Hội Chủ Nghĩa Việt Nam¹⁵, Ferre *et al.*¹⁸, Osowe¹⁴.

ly stages of the pandemic by implementing extensive public health measures^{7,9}, and developing a Master Plan for pandemic response to address the possibility of 30,000 cases in a worst-case scenario¹⁶. The Ministry of Health mobilized the PHEOC to prepare for the pandemic and ensure the implementation of the plan¹⁷.

A zero-new-case-approach was adopted, consisting of a clear policy of risk communication through timely, accurate and transparent communication involving the whole of society through common and official channels; isolation of cases with intensive contact tracing up to the third level, massive quarantine and confinement; centralized case management, early closure and

border controls with strict implementation of quarantine protocols for foreigners, maintaining physical distance and with a strong role for civil society^{7,9}. Vietnam also adopted the systematic use of technologies to track virus carriers, with containment measures associated with the emergence of cases in each location.

Official communication regarding the government's position was the responsibility of the Prime Minister and the Minister of Health, adopting the slogan "Fighting the pandemic like fighting the aggressors"^{9,17} and raising the collective spirit in the country. There were strong government actions to combat fake news and misinformation about COVID-19¹¹, supported

by scientific literature, with the establishment of punishments for offenders, under social condemnation by the population itself¹. The population, regardless of socio-economic status, including soldiers, businesspeople, academics and students, supported health professionals in the fight against COVID-19²².

The expansion of the physical infrastructure was achieved by adapting military buildings, university facilities, and dormitories to serve as quarantine areas and temporary hospitals^{17,24}.

The establishment of CDCs, with the integration of health facilities at district and provincial levels, not only created more integrated and multifunctional facilities, but also improved the system to meet local needs by creating a wider network of hospitals capable of treating COVID-19 patients²⁵, allowing for better coordination and a faster adaptive response¹⁶.

The country clearly defined the roles of the facilities and the management structure. The Ministry of Health was responsible for providing support, including visits to health units, in preparing for the fight against the pandemic, mobilizing and providing medical equipment and personal protective equipment. The national hospitals, in turn, were responsible for training the workforce on the clinical guidelines for the treatment of COVID-19, with the aim of standardizing the care provided by professionals in the national and provincial hospital services⁸. At the local level, health centers (CHS) acted as the first point of contact for information and guidance^{7,8}.

Despite Vietnam's successful response to COVID-19, challenges common to other countries were identified, such as the lack of medical equipment (ventilators in the ICUs) and lack of PPE (masks and gowns)⁷.

In the literature, there is evidence of investments in various health surveillance devices in the country, triggered by avian influenza in 2003 and previous pandemic threats such as Nipah virus and SARS^{11,14}. These included contributions to laboratory diagnostics, real-time electronic outbreak warning systems, virological surveillance networks focused on influenza, a training program in field epidemiology, cooperation and coordination between the animal and human health sectors, passive surveillance mechanisms with reporting, and improved risk communication.

Epidemiologic investigations were conducted by CDC health workers and local law enforcement, with systematic access to patients' histories of social interactions and mobility patterns

as surveillance work process technologies^{9,11}. Testing capacity was strengthened over time, with provincial governments playing a key role. Local production of kits to diagnose COVID-19 infection was developed, and a health reporting system on web and mobile platforms was introduced for people to report their symptoms and suspected cases in nearby areas²⁶.

Since 2005, Vietnam has followed a national plan based on the International Health Regulations²⁷ and has made efforts to strengthen an event-based surveillance (EBS) model by implementing it in the country's hospitals and clinics. It has several surveillance systems that aggregate data from a variety of sources, including communities and health units, allowing for territorial monitoring of the health situation²⁶. In addition, the Vietnamese government established a health declaration system for foreign travelers entering the country for case monitoring and surveillance, and activated the Hanoi Smart City app for the capital.

Italy

In contrast to Vietnam, the health system in the Lombardy region of Italy collapsed during the first wave of the epidemic¹⁰. Since 2006, Italy had not updated its National Plan for Public Health Emergencies, had not stockpiled any type of PPE, and had never tested horizontal and vertical coordination procedures²⁸.

Although there are records that the country, like Vietnam, began its preparation before the first confirmed case with the creation of a working group (WG) led by the Italian Minister of Health²⁹, the evolution of the epidemic in the first wave of the disease was dramatic, especially in the northern region of the country³¹.

The coordination of the national response was placed under the responsibility of the Head of the Civil Protection Department. On February 5, 2020, the Scientific and Technical Committee (CTS) was established, composed of experts and qualified representatives of the state administrations. The CTS and the WG aimed to support decision-making and to assist the health regions, including the financing of actions, as Italy did not have a fund for a public health emergency of national concern^{21,32}.

According to Wang *et al.*²⁹, the response was divided into three phases: the first prioritized border control and the establishment of a national agency to coordinate the response and implement a surveillance system for COVID-19; the second divided the country into zones (red, yel-

low and white) for the implementation of public health measures, based on colors that defined a set of restrictive measures: red consisted of more restrictive measures and white the opposite³²; and the third defined flexibilization measures. In addition to these measures, the expansion of the testing policy and the implementation of the national surveillance system for laboratory-confirmed cases of SARS-CoV-2 based on the laboratory network were progressively pursued^{33,34}.

Italy adopted the mitigation strategy, with central government intervention for a national lockdown at a critical moment in the epidemic, when local lockdowns were not sufficient to stabilize the situation. At that time, databases recorded a high incidence at the national level, exceeding the level of 250 new cases per week per 100,000 inhabitants³¹.

There are records of investments in the dissemination of public information through traditional communication channels and social media to warn people about the pandemic, as well as to combat misinformation and false information on two fronts: disseminating information on the official website, encouraging citizens to seek it out through these channels; and contacting the companies responsible for social networks, such as Google, Instagram and others, to support the fight against fake news³⁰.

Due to the characteristics of Italy and its health system, the response, the organization of actions, the adherence of the population and also the political support for the decisions to combat COVID-19 varied from one region to another. The high degree of political-administrative decentralization in the national health system resulted in different directions, prioritizing the most affected regions in the first actions^{19,20,21}. As a result, Italy configured very different responses, even in contiguous and nearby regions^{20,21}. Although the literature considers the country's response a failure, there were successful regions, such as Veneto, whose response was based on territorial surveillance, with a consequent reduction in hospitalizations²¹.

An investment plan was developed to expand hospital capacity, recruit ICU doctors and nurses, medical students and retired health professionals, and purchase medical equipment^{21,33}.

In the case of surveillance, the common national infrastructure for reporting infectious diseases was not used. Different data streams were created that required time for local configuration and adaptation, leading to inconsistent responses among local health authorities^{31,33}.

The graphs from Figure 2 show the correlation between the epidemiological situation and the main measures adopted by the countries, between February and June 2020, in the two countries studied.

Discussion

The two countries investigated experienced the pandemic at the same time and had different outcomes. While Italy reached 564.06 deaths per million inhabitants by May 31, 2020, Vietnam had no deaths during the period studied^{12,35}.

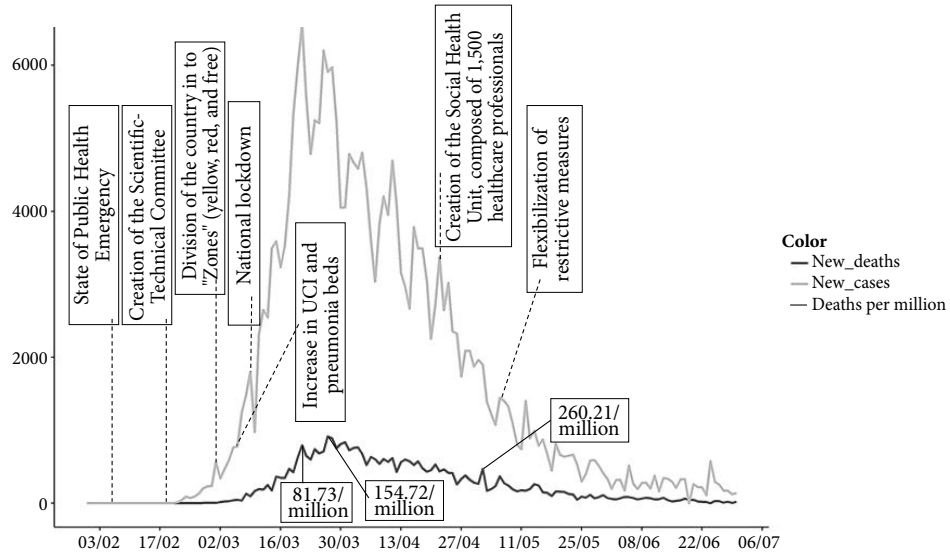
Vietnam's positive performance can be attributed to several factors, including strong national coordination that synchronized the actions of the other levels of the system and defined roles and behaviors for managing the health crisis. As in Vietnam, other studies have highlighted that national coordination was a key element in tackling COVID-19 in countries such as China and South Korea^{3,36}.

In contrast to these countries, Italy had a fragile, slow, diffuse and poorly articulated national coordination, where the central government assumed the role of guiding and monitoring²¹. In this sense, authors²⁸ have pointed out that the regionalized organization of the health system in Italy, although having advantages in terms of flexibility to adapt to local needs and allowing innovative experiments in terms of service delivery models, may have been a disadvantage during the epidemic, which required a higher level of coordination and faster decision-making.

Although the study points to a negative scenario observed in Italy, local experiences gained in the country show that a response focused on territorial and community-based primary care made it possible to reduce hospitalizations and avoid the collapse of the health system^{19,20,33}. Other studies confirm that this model was important in controlling the pandemic, even in situations where primary care was not well structured within the health system. In the case of China³⁶ and South Korea³, PHC was essential for case and contact tracing. On the other hand, the lack of coordination in the COVID-19 response system led in some cases to communication problems between different levels of care, which in turn created bureaucratic obstacles, even in countries where primary care is the organizer of the health system³⁴.

In the case of Italy, Mauro and Gioconetti²¹ add that due to the country's high degree of political-administrative decentralization, a debate is

Italy – cases and deaths per million inhabitants with the main measures adopted between February and July 2020



Vietnam – cases and deaths per million inhabitants with the main measures adopted between February and June 2020

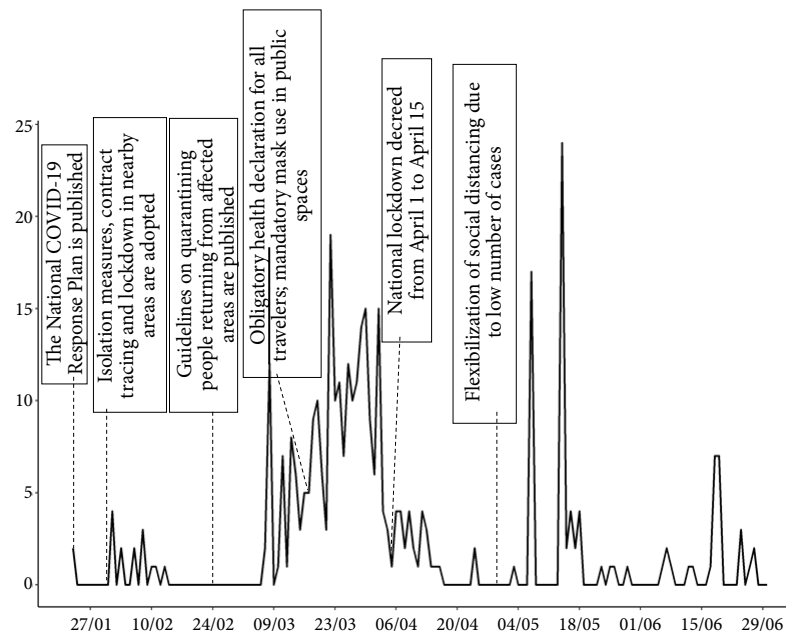


Figure 2. Measures adopted versus epidemiological situation in Italy and Vietnam, between March and July 2020.

Source: The authors, adapted from Our World in Data.

needed on the role of the central government and the need for possible (re)centralization in health emergencies, as the differences in service provision due to regional inequalities and the lack of integration and coordination to deal with competition between health care providers (private/

public and public/public) were negative factors in the management of the pandemic.

The adoption of territorial and community surveillance in Vietnam, together with the exaltation of a collective national spirit and the engagement of the whole of society, were important

features of the country's response⁸. In this regard, the existence of decentralized structures coordinated by a national body directing decision-making on communicable disease surveillance was fundamental. A similar situation was observed in China, where the decentralized network for disease control and prevention in the territories contributed to the control of the epidemic³⁶, and in South Korea, where decentralized structures linked to the Center for Disease Control (KCDC) acted in the surveillance of COVID-19³.

In all these countries, there was a unified direction and behavior, guided by rigorously planned actions. There is evidence that the structures used to face COVID-19 were qualified by experience with other epidemics³. In particular, in the case of Vietnam, the development of a health emergency plan and an event-based surveillance model enabled an appropriate and rapid response. In the case of China, in addition to the establishment of a National Emergency Plan, a governance forum was set up to address the H1N1 epidemic, with a surveillance system with alerts for rapid response³⁶. And in South Korea, a warning system for the risk of infectious diseases was defined, with stages and actions to be developed according to the epidemiological situation³. It is noteworthy that the fact that Vietnam developed a contingency plan to contain the spread of coronavirus and has a "toolbox" to be used in the case of need^{16,23} favored the control of the epidemic in the country during the period studied²³. The creation of clinical support management for COVID-19 patients with the issuance of protocols unifying clinical conduct, at a time when little was known about the disease, seems to have facilitated the management of COVID-19 cases by health professionals in Vietnam⁷. In contrast, in the Italian case, the literature indicates that there was no consensus in the country on the measures to be taken to reduce the transmission of the virus, whether on non-pharmacological measures or on the clinical management of infected people¹⁹. Authors report that one day before the publication of the lockdown decree in the Lombardy region, the most important newspaper in the country published the draft decree and caused the uncontrolled displacement of more than 41,000 people across the country³⁴.

The literature also records, in the case of Italy, that the measures adopted for the reform of the health system in the last 30 years led to a reduction in the supply and provision of services for care in general, affecting the number of beds, mainly in ICUs, as well as health professionals¹⁹. In contrast, the reform of the Vietnamese health system was able to increase the effectiveness of the response to COVID-19, mainly by integrating care and surveillance actions, defining strategic roles for each level of health care, and including health promotion practices, with a focus on health education^{7,8}.

Although the study did not aim to compare the responses of the two countries, due to the historical and structural differences between them, it was possible to verify that the main strategies adopted by Vietnam and Italy, containment and mitigation, respectively, had positive effects on the response to the pandemic.

Concluding remarks

The results presented reiterate elements of an appropriate response that have been identified in other studies³⁷, such as strong national coordination, experience translated into learning in the management of communicable diseases that is reflected in action planning and community-based surveillance involving society at large.

The study points out that the containment strategy adopted by Vietnam was fundamental to avoiding deaths in the country. In particular, the institutional articulation between care and surveillance mobilized health practices that favored the control of the pandemic, as well as the collectivist and cooperative spirit as an element of citizenship.

With regard to Italy, the mitigation strategy used to some extent reversed the chaotic situation in which the country found itself during this period. However, this was only possible thanks to the action of the central government and the introduction of the national lockdown, which reaffirmed the role of the state in times of health crises such as the COVID-19 pandemic.

Finally, for future pandemics, it is worth considering the need to translate lessons learned into policy action to ensure the health of populations around the world.

Collaborations

C Matos: worked on the initial conception of the article, data production and analysis, writing, and general review. ESG Alves: contributed to the production and analysis of data and writing of the article. J Paim: coordinated the research and contributed to the writing and final review.

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