Describing the pattern of the COVID-19 epidemic in Vietnam
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ABSTRACT
Given the rapid spread of the COVID-19 pandemic and the huge negative impacts it is causing, researching on COVID-19-related issues is very important for designing proactive and comprehensive public health interventions to fight against the pandemic. We describe the characteristics of COVID-19 patients detected in the two phases of the epidemic in Vietnam. Data used in this paper were mainly obtained from the official database of the Ministry of Health of Vietnam. Descriptive statistics were carried out using Stata 16 software. As of 18 May 2020, the cumulative number of COVID-19 cases detected in Vietnam was 324, 16 cases from 4 cities and provinces in the first phase (during 20 days, 0.8 cases detected per day) and 308 cases from 35 cities, provinces in the second phase (during 76 days, 4.1 cases detected per day). Vietnam has mobilized its entire political system to fight the COVID-19 and achieved some initial successes. We found both similarities and differences between the two phases of the COVID-19 epidemic in Vietnam. We demonstrated that the situation of the COVID-19 epidemic in Vietnam is getting more complicated and unpredictable.

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Background
The progress of COVID-19 has recently been declared by the World Health Organization (WHO) as a public health emergency worldwide [1]. As of 18 May 2020, more than 4.8 million laboratory-confirmed cases had been reported globally. More than 317,000 people have died of COVID-19 [2].

In Vietnam, a middle-income country with a population of more than 96 million people, the first case of COVID-19 was detected on 23 January 2020. As of 18 May 2020, there were 324 confirmed cases throughout the country. Of these cases, 263 have recovered and no death was reported [3]. The COVID-19 epidemic in Vietnam can be described in two phases. The first phase, lasting from 23 January to 13 February 2020, was characterised by detecting and treating 16 cases relating to Wuhan in China. All of these cases recovered and the last patient was discharged on 25 February 2020, thus clearing Vietnam temporarily from COVID-19 for 20 days. The second phase, from 6 March was characterised by the emergence of a further epidemic involving 308 new cases detected in the country. Many of these cases had travelled from Europe, the USA, and other countries, including many Vietnamese nationals. There were also challenges of disease clusters in high population density areas and the potential of silent community transmission. Vietnam mobilised participation from its entire political system to fight the COVID-19 epidemic, employing the principle ‘Early detection, strict quarantine, isolation as well as active treatment’, and achieved some initial successes. The country’s response to the COVID-19 has received acclaim for its effectiveness and transparency [4,5].

Given the rapid spread of the COVID-19 pandemic and the huge negative impacts it is causing, research on COVID-19-related issues is very important for designing proactive and comprehensive public health interventions to fight against the pandemic. In this paper, we describe the characteristics of COVID-19 patients detected in the two phases of the epidemic in Vietnam. The findings from this paper can yield useful insights for developing appropriate intervention actions both in Vietnam and other similar settings in the world.

Methods
Data source
Data used in this paper were mainly obtained from the official database of the Ministry of Health of Vietnam (https://ncov.moh.gov.vn/). Additional information was extracted from the Coronavirus Disease (COVID-19) – Statistics and Research website (https://ourworldindata.org/coronavirus#how-long-does-covid-19-last) and provided by provincial centres for disease control in Vietnam. All COVID-19 cases detected before 18 May 2020 were included in our analyses.

Measurements
In this paper, the following variables were included:
COVID-19 cases detected in Vietnam was 324, 16
As of 18 May 2020, the cumulative number of
results
2
research, Hanoi University of Public Health.
Scientific and Ethical Committee in Biomedical
The protocol of this study was approved by the
Ethical considerations
Using Stata 16 software (Stata Corporation).
Analyses when appropriate. All analyses were conducted
tests or Wilcoxon Rank Sum tests for continuous vari-
tional differences in patients’ characteristics between phase one and
two, we used Chi-square tests for categorical variables,
tests or Wilcoxon Rank Sum tests for continuous vari-
when appropriate. All analyses were conducted
using Stata 16 software (Stata Corporation).

Data management and analysis
A research team from Hanoi University of Public Health
reviewed and abstracted the data. Data were entered into
a computer using Excel software. Descriptive statistics
were carried out with means, median, standard deviation
and interquartile of continuous variables, cout and propor-
tions for categorical variables. To detect the differ-
ences in patients’ characteristics between phase one and
and second phase were 2 and 25, respectively (Figure 1).
By 18 May, there were 263 COVID-19 patients
fully recovered and discharged (recovery rate of
81.1%), 16 in the first phase and 247 in the second
phase (Figure 2(a)), resulting in a peak number of
currently positive cases (needing medical treatment
on the same day) in the first phase of 12 and in the
second phase of 182 (Figure 2(b)).
Table 1 shows the main characteristics of the
COVID-19 patients detected during the two phases.
The patients detected in the two phases were quite
similar in terms of sex distribution, with slightly
more females in the first phase. Mean age in both
phases was about 35 years. Vietnamese nationals
made up more than 80% of cases in both phases,
but more than half of all patients had travelled from
other countries. However, some differences in the
characteristics of the patients detected in the two
phases were also observed. As compared to the first
phase, the second phase had a higher proportion of
patients who had not yet recovered (80.2% vs. 100%,
$ p = 0.048$), and longer duration of treatment among
recovered cases (19 days vs. 14 days, $ p < 0.001$).

Discussion
The number of COVID-19 cases detected in Vietnam
by 18 May 2020 (324, a rate of $3.4$ per million
population, and accounting for $0.0067\%$ of $4,848,110$ cases
reported worldwide) was lower than the rate for
Cambodia ($8.5$ per million) and similar to Laos ($3.2$
per million), but much lower than the figures of other
Asian countries such as Thailand ($43.7$ per million),
the Philippines ($119$ per million), Malaysia ($220$
per million), and China ($59.6$ per million) [9].
The highest number of cases detected per day in Vietnam
(24) was lower than the figures reported in other
Asian countries such as Cambodia ($31$), Thailand
($188$), the Philippines ($538$), Malaysia ($235$), and
China ($14,108$) [9].
Vietnam has mobilized its entire political system
to fight the COVID-19. Vietnam (as well Laos)
ranked number one in the world (score of $100/100$
in terms of measures to fight the spread of the
COVID-19, stricter than all the other Asian countries
[10]. Once the first case of COVID-19 was detected,
Vietnam immediately established a National Steering
Committee for COVID-19 Prevention and Control
under the auspices of the Deputy Prime Minister.
Schools in Vietnam were closed from the end of
January 2020. The Government also cancelled public
events, suspended public transport and imposed travel restrictions. International incoming flights were not allowed from 15 March 2020 and mass quarantining began on 16 March. All the people entering the country from the COVID-19 infected nations and those who had been in direct contact with a confirmed case were put into compulsory quarantine. Vietnam’s layered contact-tracing procedure has also proven critical in battling the virus. Contacts of these people also required self-isolation. Communities, streets or buildings where a case was detected were also quarantined. Vietnam entered a nationwide lockdown from 1 April to 15 2020. The government seriously enforced the lockdown by punishing all cases of violation.

The health system in Vietnam has been proactive and comprehensive in the fight against the epidemic. At the grassroots level, different ‘Rapid Action Teams’ with participation from all the local stakeholders, including health workers (public and private health staffs, retired health professionals and health students, etc.), policemen, soldiers, teachers, representatives of community organizations, and community people, were established to implement comprehensive health education campaigns to raise community knowledge and awareness about COVID-19 and to promote hygienic practices such as using a face mask, washing hands with soap, etc. Financial resources were mobilized from the State budget, donors, charity funds and community people to make ready essential equipment, medicines, and medical supplies. A policy on electronic medical declaration has been applied. Epidemiological investigations, including early detection of infected and suspected cases, close monitoring, supervision of people who had contact with either confirmed or suspected cases, have been actively carried out. The country has provided more than 261,000 tests for COVID-19 to its population [11]. Medical examinations for the elderly, people with chronic diseases, and other vulnerable populations have also been performed. Importantly, confirmed COVID-19 has been mostly treated at local health facilities to avoid unnecessary referrals and burdens to specialised hospitals [12].

We found both similarities and differences between the two phases of the COVID-19 epidemic in Vietnam. The number of COVID-19 cases detected was higher in the second phase reflecting the fact that the number of Vietnamese people living, working and studying abroad who returned home increased in the second phase (82% of the COVID-19 cases who had travelled from other countries were Vietnamese). Moreover, during the second phase, Vietnam had more laboratory centres where standardized testing services were provided and Vietnam expanded the testing services throughout the country [3].

The higher numbers of currently positive cases, the greater absolute number of children and elderly patients in the second phase imply that the needs for medical care and treatments for COVID-19 are increasing in Vietnam. Of note, there were 26 patients with ICU admission or severe illness, accounting for 8% of the total confirmed COVID-19 cases, all of whom were detected in phase two. Depending on the nature of their critical condition,
11 patients were provided with nasal cannulae, 7 needed non-invasive ventilation, 6 needed invasive ventilation, and two received extracorporeal membrane oxygenation [13]. Our findings suggest more special and intensive care (such as specific intensive care (ICU) units and diagnostic lab testing, protocols for management, and adequate equipment for COVID-19, etc.) are likely be needed in the future.

As this was a short-term study using secondary data sources, the results cannot be considered as more than a snapshot of the COVID-19 epidemic in Vietnam. We will need to continue to have more in-depth analyses. However, we have demonstrated that the situation of the COVID-19 epidemic in Vietnam is getting more and more complicated and unpredictable. Although Vietnam achieved initial success in providing timely treatment to the COVID-19 patients as well as in containing the spread of the disease in the community, further proactive and comprehensive actions to tackle the COVID-19 epidemic in this country must be carried out as the global pandemic proceeds.
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Author contributions

HVM conceptualized the idea and wrote the first draft. HHH prepared database. KQL and HVM and analyzed data. LNQ and TTTH reviewed and edited the final version. The manuscript has been read and approved by all the authors.

Disclosure statement

The authors report no conflicts of interest.

Ethics and consent

This study has been approved by the Scientific and Ethical Committee in Biomedical Research, Hanoi University of Public Health. The dataset used, analysed, and cited for this short communication is freely available from the Vietnam Ministry of Health and thus did not require ethical approval for use.

Funding information

None.

Paper context

Vietnam has mobilized its entire political system to fight the COVID-19 and achieved some initial successes. We describe the two phases COVID-19 in Vietnam, by using official database of the Ministry of Health. As of 18 May, the cumulative cases detected were 324, with 0.8 and 4.1 cases per day in the first and second phases, respectively. We suggest that the COVID-19 epidemic in Vietnam is getting more complicated and unpredictable as the global pandemic progresses.

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Table 1. Characteristics of the COVID-19 patients detected during the two phases.

|                          | The first phase | The second phase |
|--------------------------|----------------|-----------------|
|                          | n (%)          | n (%)           |
| Sex                      |                |                 |
| Female                   | 10 (62.5)      | 153 (49.7)      |
| Male                     | 6 (37.5)       | 155 (50.3)      |
| Age, mean (SD)           | 35.6 (18.9)    | 35.2 (15.0)     |
| Age, median (IQR)        | 29.0 (25.0, 49.5) | 30.0 (24.0, 45.0) | 0.89 |
| Age group                |                |                 |
| 0–10 years               | 1 (6.3)        | 6 (1.9)         |
| 11–20 years              | 1 (6.3)        | 36 (11.7)       |
| 21–30 years              | 8 (50.0)       | 118 (38.3)      |
| 31–40 years              | 0 (0.0)        | 45 (14.6)       |
| 51–60 years              | 4 (25.0)       | 80 (26.0)       |
| 60 years and over        | 2 (12.5)       | 23 (7.5)        |
| Nationality              |                |                 |
| Vietnamese               | 13 (81.3)      | 262 (85.1)      |
| Others                   | 3 (18.8)       | 46 (14.9)       |
| Had traveled from other countries |           |                 |
| No                       | 8 (50.0)       | 93 (30.2)       |
| Yes                      | 8 (50.0)       | 215 (69.8)      |
| Recovered                |                |                 |
| Not yet                  | 0 (0.0)        | 61 (19.8)       |
| Yes                      | 16 (100.0)     | 247 (80.2)      |
| Days of treatment among the recovered cases, median (Min-Max) | 14.0 (9–21) | 19.0 (5–62) | <0.001 |

SD: Standard deviation; IQR: Interquartile range
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