Asian Pacific Journal of Environment and Cancer
Vol 3 No 1 (2020), 49-53
Original Research

The COVID-19 Pandemic in Chiba Prefecture, Japan and Viet Nam: A Lesson-learned in COVID-19 Pandemic Control in These Two Populations

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Aims: The study aimed to describe and compare the status of COVID-19 occurrence in Chiba prefecture and Viet Nam to recommend lesson-learned in COVID-19 control between two populations.
Methods: We used the official database of COVID-19 published online by the Chiba Prefectural Government, and the Viet Nam Ministry of Health. The database's variables include ID, age, gender, residence, sources of infection, the onset date of symptoms, and the positive confirmation date. The observation period starts on 23 January 2020, when the first positive patient appeared in Viet Nam and the end on 13 July 2020.
Results: There were 1,166 and 373 positive cases, giving the estimated number of positive cases per million persons was 186.2 and 3.9 in Chiba and Viet Nam, respectively. The ratio of asymptomatic patients to those with symptomatic in Viet Nam is much higher than Chiba prefecture (3.14 vs. 0.15). In Chiba, there were two waves of COVID-19 occurrence; the first wave reached a peak on 28 Mar. 2020 with 64 positive cases and the second wave reached a peak on 11 Jul. 2020 with 29 positive patients. In Viet Nam, the first local case was on 23 Jan. 2020 and the last local case was on 16 Apr. 2020. During the last 88 days, from 16 Apr to 13 Jul. 2020, there were no local positive cases.
Conclusions: The findings suggest that the prohibition of unnecessary commuting, meeting at the public places, and night outings of the 20-60 age group of people should be very effective in preventing infection spread. More importantly, as a lesson-learned from Viet Nam, we need to take action of testing, tracing, isolating suspected people who have closely contacted the confirmed positive cases, and quarantine people at the port of entry and immigration as fast as possible before the situation gets worse.

Introduction

The COVID-19 pandemic has exploded since cases reported in China in December 2019 [1-2-3-4-5-6]. The COVID-19 pandemic is now spreading all over the world including Japan [7-8]. The first COVID-19 positive patient in Japan was reported on 15 January 2020 [9]. After that, the first positive patient in Chiba prefecture was reported on 30 January 2020 [10].

The most common presenting symptoms are cold symptoms, such as cough (86%), fever or chills (85%), and shortness of breath (80%), diarrhea (27%), and nausea (24%) [1-3-8]. Most people infected with the COVID-19 virus will experience mild and moderate respiratory problems and then recover without requiring any special treatments. That is why they may not notice that they had COVID-19. However, a few people get worse and develop pneumonia, and then they may go into death. Aggravation rate and mortality are the highest in people aged 65 or older and those who live in a nursing home or a long-term care facility. Other risks for COVID-19 include hypertension, cardiovascular disease, diabetes, chronic respiratory disease, cancer, renal disease, and obesity [8]. Whether they develop severe symptoms or not, most people of the coronavirus carrier will infect other people with the coronavirus. On the other hand, even if they have only mild symptoms, a few people of the coronavirus carrier will infect many people with the coronavirus at once. This is the cluster [4-6]. Besides, there are no specific vaccines or treatments for COVID-19 so far. That is why we have to prevent coronavirus infection [8].

Viet Nam's official name is the Socialist Republic of Viet Nam. Located in South East Asia, Viet Nam is shared her border with the Lao PDR, Cambodia, and China. With a population of 96,208,984 persons on 1 April 2019, cities of Viet Nam are mostly crowded. Having almost 1283 km of borderline in mutual, Viet Nam is one of the eight most trade partners of China. With the high volume of trade with China and a big number of highly populated cities, Viet Nam might be the high risk of this deadly coronavirus pandemic.

Chiba had a population of 6,259,000 people in Nov. 2019 and the population remained stable during the first quarter of 2020 when we conducted this study. Chiba is one of 47 prefectures in Japan and is located in the Kanto region. Chiba is the sixth most populous prefecture and the capital being Chiba City. The prefecture shares borders with three other prefectures of Ibaraki, Saitama, and Tokyo.

The study aimed to describe and compare the status of COVID-19 occurrence in Chiba prefecture and Viet Nam to recommend lesson-learned in COVID-19 control between two populations.

Materials and Methods

We applied the method of descriptive epidemiology in this study. We observed COVID-19 positive cases in Chiba prefecture of Japan [10], and Viet Nam from 23 Jan. 2020, when the first positive patient appeared in Viet Nam [11], to 13 July 2020, the end of this study follow-up. The information about Chiba was collected from the database named Occurrence Status of COVID-19 Positive Cases in Chiba, which was published by the Health and Welfare Department of Chiba Prefecture [10]. That data included ID, age, gender, address, sources of infection, the onset date of symptoms, positive confirmation date, and the presence of symptoms of positive cases.

On the other hand, the data of Viet Nam was collected from the Ministry of Health's Website [11]. Variables included ID, age, gender, the landing date or move-in, the first date exposed to the positive patients, home address and/or working address of suspected cases for isolation, nationality, the onset of symptoms, the date of tested positive with COVID-19, and history of chronic diseases. We compared 1,166 positive cases in Chiba and 373 cases in Viet Nam by gender, age, and presence of symptoms. The first COVID-19 positive case in Chiba was a man in his forties who lived in Wuhan, China, and returned to Japan by a charter aircraft. He took a PCR test and had

a positive result on 30 January 2020, and then became symptomatic on 1 February 2020 [10]. Besides, the first two positive cases in Viet Nam were Wuhan men and Vietnamese women, who had been to Wuhan, China, and had a positive result on 23 January 2020 [11].

Results

There were 1,166 positive cases reported in Chiba and 373 positive cases in Viet Nam, giving the estimated number of positive cases per million persons was 186.2 and 3.9, respectively. Chiba to Viet Nam ratio of this indicator was 47.7.

The number of positive cases in males was higher than females with male to female ratio is about 1.1 in Viet Nam and 1.4 in Chiba prefecture. Viet Nam peaks in the group aged 20-29 years and is similar to it in Chiba prefecture, in which the proportion is 35.66% and 20.75% of total positive cases, respectively, Table 1.

		Chiba Prefecture							Viet Nam			
Age group	Men		Women		Total		Men		Women		Total	
	Case	%	Case	%	Case*	%	Case	%	Case	%	Case	%
0-9	11	1.62	7	1.46	18	1.54	6	3.02	3	1.72	9	2.41
19-Oct	15	2.21	29	6.04	45	3.86	15	7.54	12	6.9	27	7.24
20-29	120	17.7	122	25.42	242	20.75	70	35.18	63	36.21	133	35.66
30-39	113	16.67	52	10.83	165	14.15	49	24.62	32	18.39	81	21.72
40-49	127	18.73	56	11.67	183	15.69	21	10.55	36	20.69	57	15.28
50-59	133	19.62	62	12.92	195	16.72	23	11.56	15	8.62	38	10.19
60-69	79	11.65	44	9.17	123	10.55	11	5.53	11	6.32	22	5.9
70-79	42	6.19	37	7.71	79	6.78	4	2.01	1	0.57	5	1.34
80-89	31	4.57	47	9.79	78	6.69	0	0	1	0.57	1	0.27
90+	7	1.03	24	5	31	2.66						
Unknown age	0	0	0	0	7	0.6						
Total	678	100	480	100	1,166	100	199	100	174	100	373	100

Table 1: Distribution of Incidence Cases by Age Group and Sex in Chiba Prefecture and Viet Nam.

*Unknown sex, eight patients

The ratio of asymptomatic patients to those with symptomatic in Viet Nam is much higher than in Chiba prefecture (3.14 vs. 0.15). There were three cases aged 90+ years in Chiba but zero cases in Viet Nam. The highest proportion of asymptomatic patients was on the group aged 20-29 in both Chiba (21.19%) and Viet Nam (34.98%), Table 2.

		Chiba Prefecture							Viet Nam			
Age group	Asymptomatic		Symptoms		Total		Asymptomatic		Symptoms		Total	
	Case	%	Case	%	Case*	%	Case	%	Case	%	Case	%
0-9	5	3.31	13	1.28	18	1.54	8	2.83	1	1.11	9	2.41
19-Oct	12	7.95	33	3.25	45	3.86	19	6.71	8	8.89	27	7.24
20-29	32	21.19	210	20.69	242	20.75	99	34.98	34	37.78	133	35.66
30-39	18	11.92	147	14.48	165	14.15	69	24.38	12	13.33	81	21.72
40-49	15	9.93	168	16.55	183	15.69	41	14.49	16	17.78	57	15.28

50-59	22	14.57	173	17.04	195	16.72	26	9.19	12	13.33	38	10.19
60-69	12	7.95	111	10.94	123	10.55	17	6.01	5	5.56	22	5.9
70-79	17	11.26	62	6.11	79	6.78	3	1.06	2	2.22	5	1.34
80-89	14	9.27	64	6.31	78	6.69	1	0.35	-	-	1	0.27
90+	3	1.99	28	2.76	31	2.66	-	-	-	-	-	-
Unknown age	1	0.66	6	0.59	7	0.6	-	-	-	-	-	-
Total	151	100	1,015	100	1,166	100	283	100	90	100	373	100

Table 2: Distribution of Incidence Cases by Age Group and the Onset of Symptoms in Chiba Prefecture and Viet Nam.

*Unknown sex, eight patients

In Chiba, there were two waves of COVID-19 occurrence; the first wave reached a peak on 28 Mar. 2020 with 64 positive cases and the second wave reached a peak on 11 Jul. 2020 with 29 positive patients. The number of COVID-19 cases in Chiba prefecture was relatively low in both males and females with a total of fewer than 10 cases reported a day for about a 2-month duration since the first case reported on 30 January. However, there was a surge increase in cases on 28 March 2020 reported a day, the highest ever, for up to 64 patients. Then, the number of infections goes up and down like a mountain range. Until 16 April 2020 when the state of emergency was declared and the number of cases a day started decreasing gradually and became almost stable until 1 July 2020 when the second wave started, Figure 1.

Figure 1: The Timeline of Daily Positive Cases in Chiba and Viet Nam.

In Viet Nam, the first import case was on 23 Jan. 2020 and the last case was on 12 Jul. 2020. The first local case was also on 23 Jan. 2020 and the last local case was on 16 Apr. 2020. During the last 88 days, from 16 Apr to 13 Jul. 2020, there were no local positive cases reported in the whole country. The highest number of local positive cases was on 30 Mar. 2020 with 14 positive cases, Figure 2.

Figure 2: The Timeline of Daily Positive Cases in Viet Nam Categorized as Import and Local Transmission.

There was zero death due to COVID-19 in Viet Nam during the study period. The highest number of import cases by a charter flight was on 15 May 2020 with 26 patients.

Discussion

Viet Nam has very little cases compared to Japan, and surprisingly no death was reported yet in the present study by the end of follow-up [11]. We can understand that they are doing very well in preventing infection spread and treating patients.

Viet Nam had a population of over 96 million, which is not far different from Japan which had a population of 126 million, but otherwise have a very low rate of infection compared to Japan as well as Chiba prefecture [9-10]. The raw number of a total of positive cases reported in Chiba was over 3 times higher than Viet Nam (1,166 vs. 373 cases) but the estimated number of positive cases per million persons was nearly 50 times higher in Chiba than Viet Nam.

There are possible many social factors relating to the spread of COVID-19 in Chiba Prefecture. Most of the cases are found in the 20-60 age group of people who are adults working and commuting every day between home and workplace. Therefore, we can understand that they are more susceptible to infection by the coronavirus since they face and contact many people in public places such as bus, train, public toilet, workplace, bar, karaoke, restaurants, and so on. Compared to the 0-19 and 70+ age groups of people, they stay at home more and avoid going and being in public crowded places or having better behaviors of social distancing.

The sensitivity of the COVID-19 PCR test is approximately 77.7%; meaning 22.3% of infected patients are tested negative (false negative) and the specificity of the COVID-19 PCR test is approximately 98.8%; meaning 1.2% of non-infected people are tested positive (false positive) [12]. Since the sensitivity of the COVID-19 PCR test is relatively low, we need a better method to find out falsely tested negative patients to prevent infection spread in society.

Adult people might have a stronger immune system compared to young and elderly people. Therefore, even if they are infected, some of them might not show any noticeable symptoms including cough and fever. These asymptomatic patients, who face and contact with many people in public places, can spread the infection to other people in some ways unconsciously. For infection spread control, the government should strengthen and continue the prohibition of any unnecessary and avoidable commuting, meeting at the public places, and especially, night outings. More importantly, as a lesson-learned from Viet Nam, we need to take action of testing, tracing, isolating suspected people who have contacted positive cases, and quarantine people at the port of entry and immigration as fast as possible before the situation gets worse.

Acknowledgments

We thank healthcare practitioners of health facilities in Chiba, Japan and Viet Nam for their hard work of testing, tracing, isolating, and treating activities in controlling the ongoing Coronavirus pandemic occurrences in their two populations.

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