COVID-19 Special Report

An epidemiological study of imported coronavirus disease 2019 cases; Incheon airport 2021

Ji Hye Moon, Myeong Eun Song, In Soo Choi, Seung Eun Lee, Chong Hee Choi
Incheon Airport National Quarantine Station, Korea Disease Control and Prevention Agency (KDCA)

Abstract

This report aimed to analyze confirmed cases of coronavirus disease 2019 (COVID-19) among imported cases at the Incheon Airport National Quarantine Station (IANQS) and to report on their epidemiological characteristics and trends while under quarantine.

In 2021, among the 11,961 imported COVID-19 cases, 1,287 (10.8%), excluding those confirmed via air ambulance, were confirmed through quarantine at the IANQS. Of these, 849 (66.0%) were male and 616 (47.9%) were in their 20s and 30s. Approximately 76.2% of the cases were Korean nationals.

According to the findings, approximately 19.3% of the cases were observed in June due to an increase in imported cases from Indonesia while, the number of imported cases gradually decreased to 2.8% in November. An analysis of the quarterly distribution of confirmed cases showed the highest number (n=420) in the third quarter and a rapid decrease in the fourth quarter (n=124). The decrease in confirmed cases was attributed to the reduced number of patients with symptoms and quarantine targets who were subjected to testing, from 2,941 in January to 1,000 in March and less than 1,000 after August.

Among the 14,977 symptomatic cases and quarantine targets, 1,263 (8.4%) were confirmed. Only 860 (66.8%) of 1,287 total confirmed cases were symptomatic. An additional 261 (20.3%) showed unrecognized fever during quarantine without reporting symptoms and 166 (12.9%) were asymptomatic. Among foreign nationals, 169 cases of unrecognized fever were reported, more than twice the 78 confirmed symptomatic cases.

In summary, the new COVID-19 variants and increased vaccination rates led to changes in the overall quarantine situation and the number of COVID-19 confirmed cases during quarantine in 2021. Analysis of these epidemiological characteristics is expected to povide reference data for future quarantine responses.

Keywords: Coronavirus disease 2019 (COVID-19), Quarantine, Airport

Introduction

Since the first report of a confirmed case of coronavirus disease 2019 (COVID-19) in the Republic of Korea (ROK), in a traveler who had visited Wuhan, on January 20, 2020, the number of confirmed cases of COVID-19 imported from overseas to the ROK was recorded as 11,961 in 2021, and 31,942 by April 2022 [1].

The number of confirmed cases imported from abroad in 2021, based on collecting samples at the Incheon Airport National Quarantine Station (IANQS), was 1,287, accounting for 10.8% of confirmed cases in the ROK. Both the Korean and overseas-import situation related to COVID-19 has changed much over time, for example, the start of COVID-19 vaccination in the United Kingdom on December 8, 2020, followed by

that in the ROK and elsewhere, and the mandatory submission of a COVID-19 polymerase chain reaction (PCR) result from February 24, 2021, for travelers entering the ROK from overseas, and the emergence of viral variants, and accordingly. Accordingly, the pattern of confirmed imported cases encountered at quarantine stations has changed over time. This report aimed to analyze the current status and characteristics of the 1,287 COVID-19 patients confirmed by sample collection at the IANQS in 2021, and to provide basic data for establishing future quarantine policies.

Result

1. Main characteristics of confirmed COVID-19 cases encountered at the IANQS in 2021

In 2021, 1,287 confirmed COVID-19 cases were identified after being tested at the IANQS, excluding those who arrived by air ambulance after being confirmed overseas. By quarter, most patients were identified in the third quarter (420; 32.6%), followed by the first quarter (373; 29.0%), second quarter (370; 28.7%), and fourth quarter (124; 9.6%). Thus, the number of confirmed cases identified at the quarantine station continued to increase during the first to third quarters and then decreased sharply in the fourth quarter. Among the confirmed cases, males accounted for 66.0% (n = 849), nearly twice as many as females (34.0%; n = 438). The 20-29-year age group was the largest by number (n = 331; 25.7%), followed by the 30-39-year age group (n = 285; 22.1%), and the 40-49-year age group (n = 228; 17.7%). Thus, individuals in their 20s and 30s accounted for 47.9% of confirmed cases, which was higher than the proportion of individuals in this age range among all confirmed cases across the country (29.6%) [2]. In addition, none of these individuals was aged over 80 years. It is not unexpected that more confirmed cases occurred among the younger generation, given the nature of travelling abroad (Table 1).

Table 1. Main characteristics of confirmed COVID-19 cases under quarantine at Incheon airport, per quarter, 2021

Category	Total		First quarter		Second quarter		Third quarter		Fourth quarter	
	n	%	n	%	n	%	n	%	n	%
Total	1,287	(100)	373	(29.0)	370	(28.7)	410	(32.6)	124	(9.6)
Sex										
Male	849	(66.0)	239	(64.1)	278	(75.1)	266	(63.3)	66	(53.2)
Female	438	(34.0)	134	(35.9)	92	(24.9)	154	(36.7)	58	(46.8)
Age group, years										
<10	31	(2.4)	6	(1.6)	10	(2.7)	13	(3.1)	2	(1.6)
10-19	97	(7.5)	30	(8.0)	19	(5.1)	36	(8.6)	12	(9.7)
20-29	331	(25.7)	87	(23.3)	68	(18.4)	124	(29.5)	52	(41.9)
30-39	285	(22.1)	81	(21.7)	91	(24.6)	82	(19.5)	31	(25.0)
40-49	228	(17.7)	62	(16.6)	83	(22.4)	70	(16.7)	13	(10.5)
50-59	197	(15.3)	65	(17.4)	62	(16.8)	63	(15.0)	7	(5.6)
60-69	98	(7.6)	32	(8.6)	34	(9.2)	26	(6.2)	6	(4.8)
70-79	20	(1.6)	10	(2.7)	3	(0.8)	6	(1.4)	1	(0.8)
≥80	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)
Nationality										
Korean	981	(76.2)	288	(77.2)	287	(77.6)	311	(74.0)	95	(76.6)
Foreigner	306	(23.8)	85	(22.8)	83	(22.4)	109	(26.0)	29	(23.4)
Continent of residence										
Asia	780	(60.6)	140	(37.5)	294	(79.5)	315	(75.0)	31	(25.0)
America	231	(17.9)	127	(34.0)	20	(5.4)	25	(6.0)	59	(47.6)
Europe	172	(13.4)	64	(17.2)	34	(9.2)	52	(12.4)	22	(17.7)
Africa	103	(8.0)	42	(11.3)	22	(5.9)	28	(6.7)	11	(8.9)
Oceania	1	(0.1)	0	(0.0)	0	(0.0)	0	(0.0)	1	(0.8)

The nationality of the confirmed cases was primarily Korean (n = 981; 76.2%), more than three times as many as foreigners (n = 306; 23.8%). More than half of these individuals resided in Asia (n = 780; 60.6%), followed by the Americas (n = 231; 17.9%), Europe (n = 172; 13.4%), Africa (n = 103; 8.0%), while a single case resided in Oceania (0.1%). However, these frequencies varied across the quarters of the year. Individuals residing in Asia accounted for 79.5% and 75.0% of confirmed cases in the second and third quarters, respectively. In the second quarter, due to the spread of the delta variant, up to 201 (68.4%) of the 294 confirmed cases from Asia resided in India and Indonesia. In the third quarter, individuals of Indonesian nationality accounted for the highest number of confirmed cases (n = 105) until July, and a total of 109 (34.6%). Confirmed cases were reported 58 from Uzbekistan and 63 from Russia, Kyrgyzstan, Tajikistan, and Kazakhstan. Thus, in the third quarter, 121 (38.4%) cases were from Russia and Central Asia. Individuals from the Americas accounted for only 5.4% and 6.0% in the second and third quarters, whereas this region accounted for 34.0% of cases in the first quarter and surged to 47.6% in the fourth quarter, which was due to the COVID-19 peak in the United States (178 of 231 confirmed cases, 77.1%) in January and December, with Americans accounting for the most of the confirmed cases [3]. The proportion of inbound travelers from Europe remained similar, except for the second quarter. The number of confirmed cases who arrived from the Republic of Türkiye was the highest, at 46 (26.7%), during this period; 35 confirmed cases (76.1%), all Korean citizens, were identified in July and August, and were presumed to be travelers for tour or missionary purposes. The second largest number of confirmed cases among inbound travelers were from Hungary (33 cases, 19.2%) and Poland (30 cases, 17.4%), who were mostly workers related to local factories of Korean companies. Of these 63 cases, 61 (96.8%) were reported in the first and second quarter of 2021.

2. Status of confirmed COVID-19 cases by period at the IANQS in 2021

The number of confirmed cases of COVID-19 at the IANQS identified per month in 2021 was 244 (19.0%) in July, followed by 167 (13.0%) in June and 160 (12.4%) in January, with the lowest number in November (18; 1.4%). Among the 11,961 confirmed cases imported into the ROK from overseas, 1,287 confirmed cases were identified at the IANQS. This proportion was highest

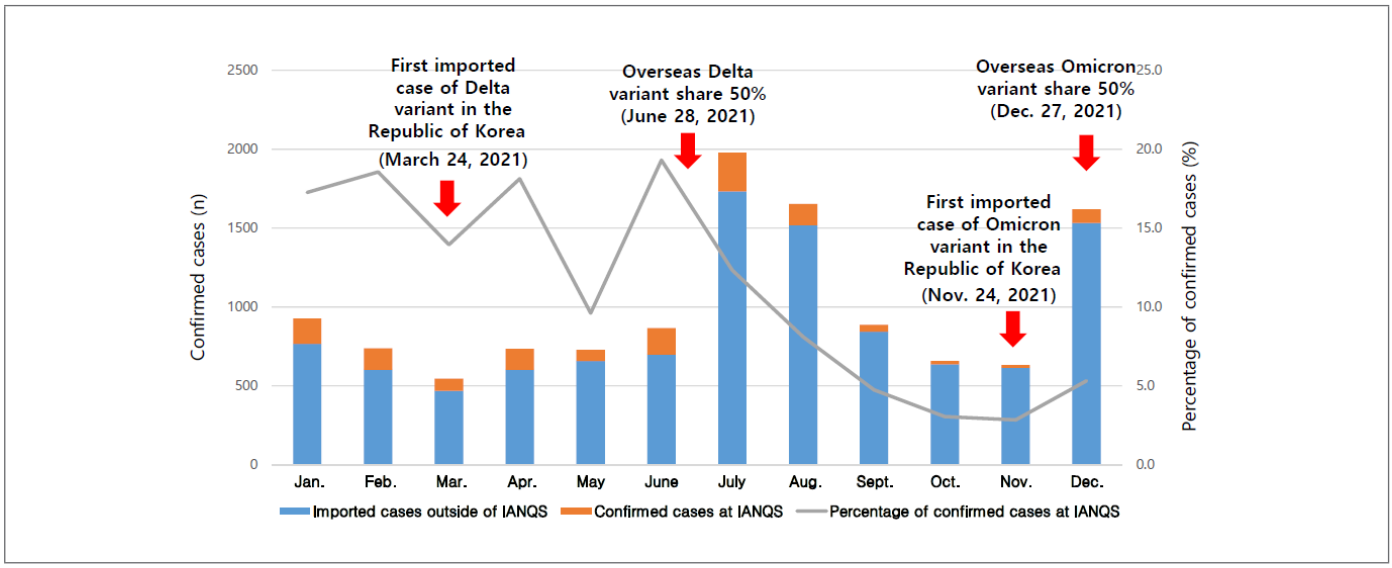

Figure 1. Percentage of confirmed COVID-19 cases at the Incheon Airport National Quarantine Station (IANQS) among total and monthly imported cases in 2021

(19.3%) in June, followed by 18.6% in February and 18.1% in April. In July, when the number of confirmed cases was the highest, the total number of imported confirmed cases was 1,977, which accounted for 12.3%, but excluding 271 confirmed cases (14.3%) in the Cheonghae military unit that month (Figure 1).

Regarding the influx of variants among the confirmed cases imported from abroad, there was no significant change in the number of confirmed cases imported from abroad since the first report of the delta variant in the ROK in March. Since June, when the Delta variant accounted for 50% of cases abroad, the number of imported Delta variant cases in the ROK rose sharply, and then showed a decreasing trend after peaking in July. The first report of the Omicron variant imported from overseas occurred in November, after which the share of the Omicron variant surged to 50% in December, and the number of confirmed cases imported from overseas also increased accordingly. In June, when the proportion of imported cases confirmed at the quarantine station was the highest, 114 were from Indonesia, accounting for 68.3% of the 167 confirmed cases. In Indonesia, the number of confirmed cases increased from June, and thus the number of confirmed cases at the quarantine station immediately increased. As most of the confirmed patients had not submitted COVID-19 PCR results, this was made a mandatory requirement en entering the ROK, and entry restrictions for those who did not submit the COVID-19 PCR results were applied from July 4, 2021. As of July 2, 2021, the average rate of having received at least one dose of COVID-19 vaccine among OECD member countries was 48.7%, and that of having received two doses was 32.6%. This, along with implementation of entry restrictions for those who did not submit a COVID-19 PCR test result led to a sharp decrease in identified cases toward the second half of the year, despite the increase in the number of inbound travelers [4] (Figure 2).

Excluding those who were asymptomatic but needed testing, the number of people tested decreased from 2,941 in January to 1,184 in July 2021. The lowest number (379) was recorded in October, but the number increased to 1,059 in December due to the spread of the Omicron variant. Of the 1,287 cases confirmed at the quarantine station, 24 were asymptomatic but were confirmed after testing for reasons such as exemption from humanitarian quarantine and referral to external agencies. Among 14,977 symptomatic people and those required to be tested at the quarantine station, excluding asymptomatic people who were tested for the above reasons, 1,263 were confirmed, indicating a positive testing rate of 8.4%. The positivity rate was

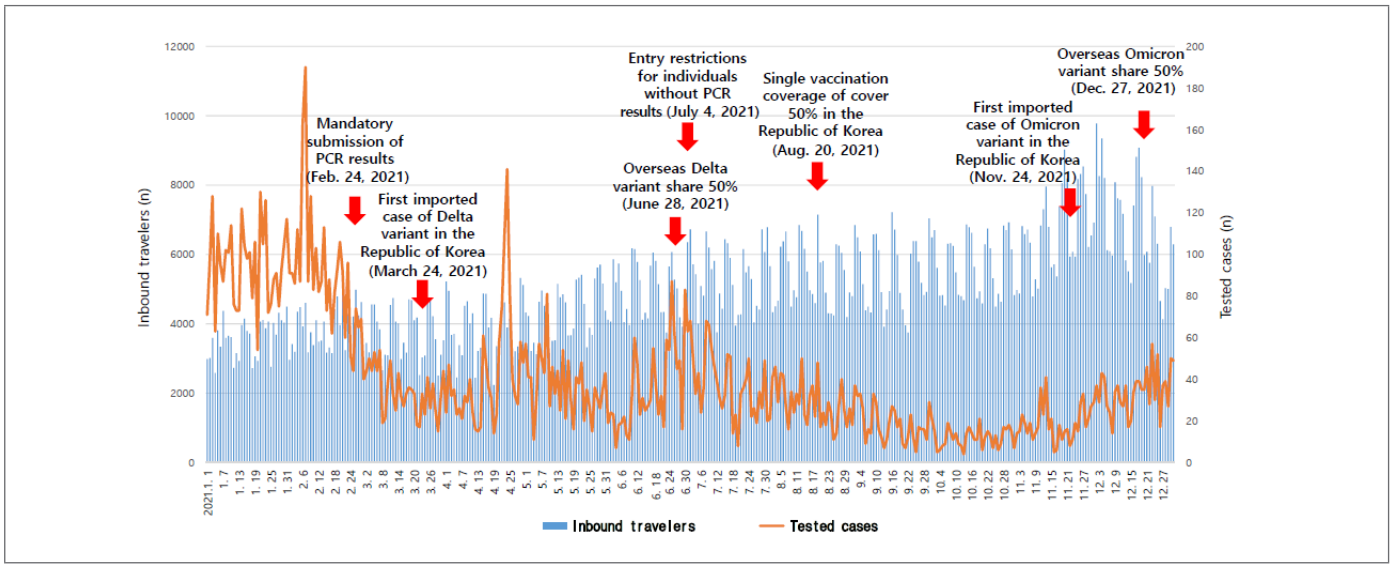

Figure 2. Trend of Incheon Airport National Quarantine Station inbound travelers and symptomatic/quarantine targets in 2021

PCR, Polymerase chain reaction

the highest at 19.9% in July, followed by 16.4% in June and 10.5% in August. Hence, the positivity rate exceeded 10% from June to August. Thereafter, it decreased to 3.0% in November and rose to 7.8% in December (Table 2).

In January and February, before the submission of negative PCR results for COVID-19 had become an entry requirement, there were more than 2,000 people with symptoms or who were targeted for testing for other reasons, but the positivity rate was in the range of 5%. From June to August, the period during which the prevalence of the Delta variant increased, the positivity rate reached 10% or more. It increased again in December with the increasing prevalence of the Omicron variant. Thus, the number of symptomatic cases and the positive test rate increased with the introduction of the Delta and Omicron variants.

3. Symptoms of confirmed COVID-19 cases at the IANQS in 2021

Among the 1,287 confirmed cases, 860 (66.8%) reported symptoms in the health declaration form. Of these confirmed cases, 261 (20.3%) had unrecognized fevers and reported themselves as asymptomatic but were confirmed to have a fever at the quarantine station, and 166 (12.9%) were asymptomatic confirmed cases (Table 3).

Of the 860 symptomatic cases, 33 (3.8%) were emergency patients who were urgently transferred to a medical institution during the quarantine stage due to respiratory distress and decreased oxygen saturation. Emergency transfers started with four cases each in January and February, rising to 12 cases in June and eight cases in July, during the Delta variant spreading period, but there were no such cases since July (Figure 3). There were no emergency patients due to the spread of the Omicron variant, which was first introduced into the ROK on November 24, 2021. In addition, Indonesians accounted for more than half of the 33 emergency patients (21; 63.6%), and the rest were all Koreans. Even considering the rapid increase in the number of confirmed cases of the Delta variant in Indonesia in the first half of 2021, this number was unusual compared to other countries. Among the 261 cases who did not report symptoms but who were confirmed by fever checks at the quarantine station, 67 were confirmed in July, the month in which the largest number of cases were identified. The proportion of individuals with unrecognized fever among all confirmed cases across Korea was the highest at 41 (30.8%) in April. Unrecognized fever cases dropped sharply after 33 were recorded in August: only five or fewer were confirmed from September to December. Even in December,

Table 2. Positive rate of samples collected from symptomatic and quarantined targets at Incheon Airport National Quarantine Station (2021)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Number of tested cases	2,941	2,557	1,065	1,267	1,146	1,016	1,184	1,262	560	379	541	1,059	14,977
Confirmed cases	158	137	73	132	70	167	236	133	42	16	16	83	1,263
Positive rate (%)	5.4	5.4	6.9	10.4	6.1	16.4	19.9	10.5	7.5	4.2	3.0	7.8	8.4

when the number of confirmed cases again increased, the number of individuals with unrecognized fevers was the lowest, at 4.7% (n = 4). Although the increase or decrease of unrecognized fever was affected by the increase or decrease of symptomatic patients and although there was an increase due to actively targeted quarantine, the increase in the number of confirmed cases with unrecognized fever could serve as a predictor of an increase in the number of symptomatic patients. The most common reason for testing those reported as asymptomatic, but who were later confirmed as positive, was "being accompanied by symptomatic cases" (n = 50; 30.1%), "pre-confirmed diagnosis" (n = 44; 26.5%), "targeted for quarantine for reasons related to countries or workplaces with a high number of confirmed cases" (n = 43; 25.9%), "exempt from humanitarian quarantine or referral to external agencies" (n = 24; 14.5%), "contact with a confirmed case" (n = 4; 2.4%), and other (n = 1; 0 .6%). Of 43 who reported as being asymptomatic but who tested positive in target testing, 24 (55.8%) were encountered in April. At that time, i.e., in the early stages of the spread of the Delta variant from India, targeted quarantine was conducted on passengers with a history of staying in India, to prevent the delay in recognition and the spread of the Delta variant in Korea, and consequently, many asymptomatic cases were confirmed to be positive.

The symptoms of confirmed COVID-19 patients differed by nationality. Koreans accounted for 782 (90.9%) of the 860 in symptomatic confirmed cases, which amounted to more than

Table 3. Symptoms of confirmed COVID-19 cases at Incheon Airport National Quarantine Station in 2021

unit: n (%)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Symptomatic cases	111	92	45	61	55	123	148	88	35	14	13	75	860
	(69.4)	(67.2)	(59.2)	(45.9)	(78.6)	(73.7)	(60.7)	(65.7)	(83.3)	(70.0)	(72.2)	(87.2)	(66.8)
Unrecognized fever	32	33	14	41	6	23	67	33	5	2	1	4	261
	(20.0)	(24.1)	(18.4)	(30.8)	(8.6)	(13.8)	(27.5)	(24.6)	(11.9)	(10.0)	(5.6)	(4.7)	(20.3)
Asymptomatic fever	17	12	17	31	9	21	29	13	2	4	4	7	166
	(10.6)	(8.8)	(22.4)	(23.3)	(12.9)	(12.6)	(11.9)	(9.7)	(4.8)	(20.0)	(22.2)	(8.1)	(12.9)

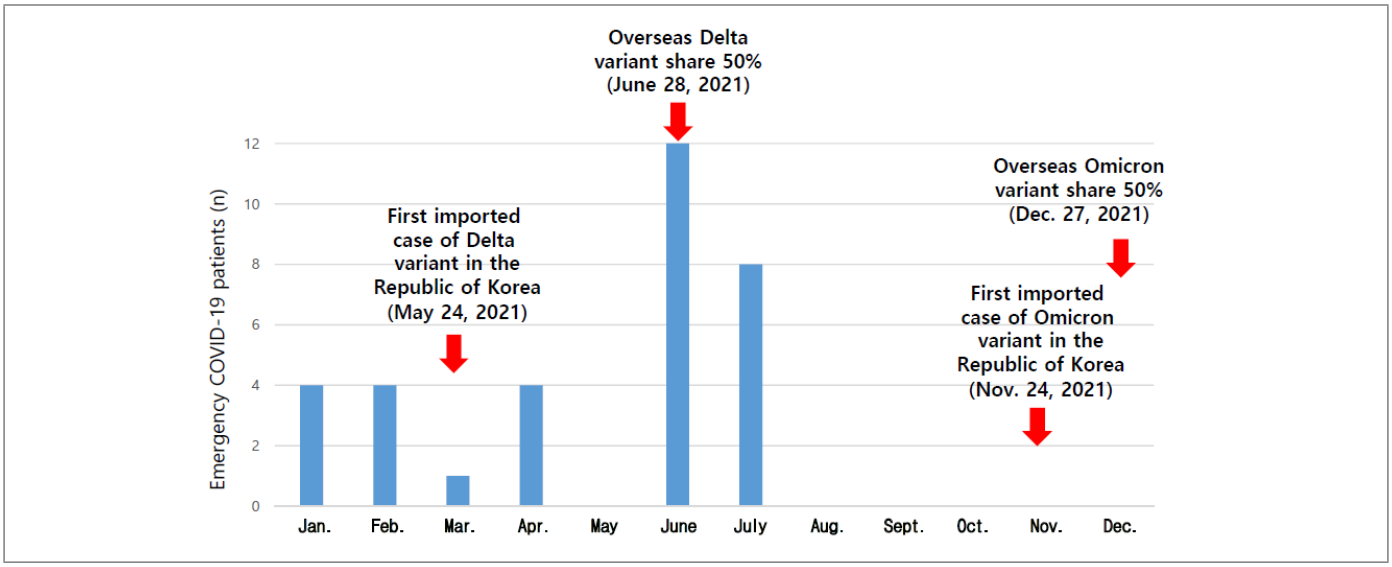

Figure 3. Emergency COVID-19 patients requiring urgent transfer at the Incheon Airport National Quarantine Station in 2021

90%. In the case of unrecognized fever, 169 of the 261 (64.8%) cases were foreigners, which was twice as many as Koreans (Figure 4). The number of foreign confirmed cases in 2021 was 306, of which 55.2% (n = 169) were confirmed after a fever check at the quarantine station although they had not reported having symptoms. The number of confirmed cases among those with unrecognized fever was more than double the number of confirmed cases (n = 78) who had reported symptoms. Of the 166 asymptomatic confirmed cases, 108 (65.1%) were Koreans. The reason for the test in these asymptomatic cases was "accompanied by symptomatic patients" and "pre-confirmed history" (n = 34; 31.5%) respectively, and "targeted for quarantine" (n = 21; 19.4%). In the case of foreigners, 22 cases (37.9%) were "targeted for quarantine," followed by "accompanied by symptomatic patients" at 16 (27.6%), and "pre-confirmed history" and "referral to external examination" (each n = 10; 17.2%).

4. Strengthening the quarantine response to COVID-19

The IANQS is holding regular quarantine planning meetings to determine which individuals will be subjected to reinforced quarantine by identifying trends in overseas outbreaks and continuously analyzing confirmed cases imported from overseas. The fever standard for symptomatic persons was adjusted from 37.5°C to 37.3°C, and asymptomatic people accompanied by a symptomatic person, who have a high transmission probability, were included as subjects targeted for testing. The IANQS has been taking a pre-emptive approach, before the government enhanced the quarantine response, with targeted quarantine including complete inspections for groups with epidemiological connections to areas where there are many asymptomatic confirmed cases or to high-risk countries. In 2021, due to the spread of the Delta variant, targeted quarantine for inbound travelers from India and Indonesia was the main quarantine response.

With the number of new confirmed cases in India increasing rapidly in April 2021, among passengers who arrived from India on a flight on April 6, 2021, one case was confirmed at the IANQS, and 13 at the local government inspection station thereafter. Accordingly, on April 14, 2021, a targeted quarantine was started for travelers inbound from India. Subsequently, due

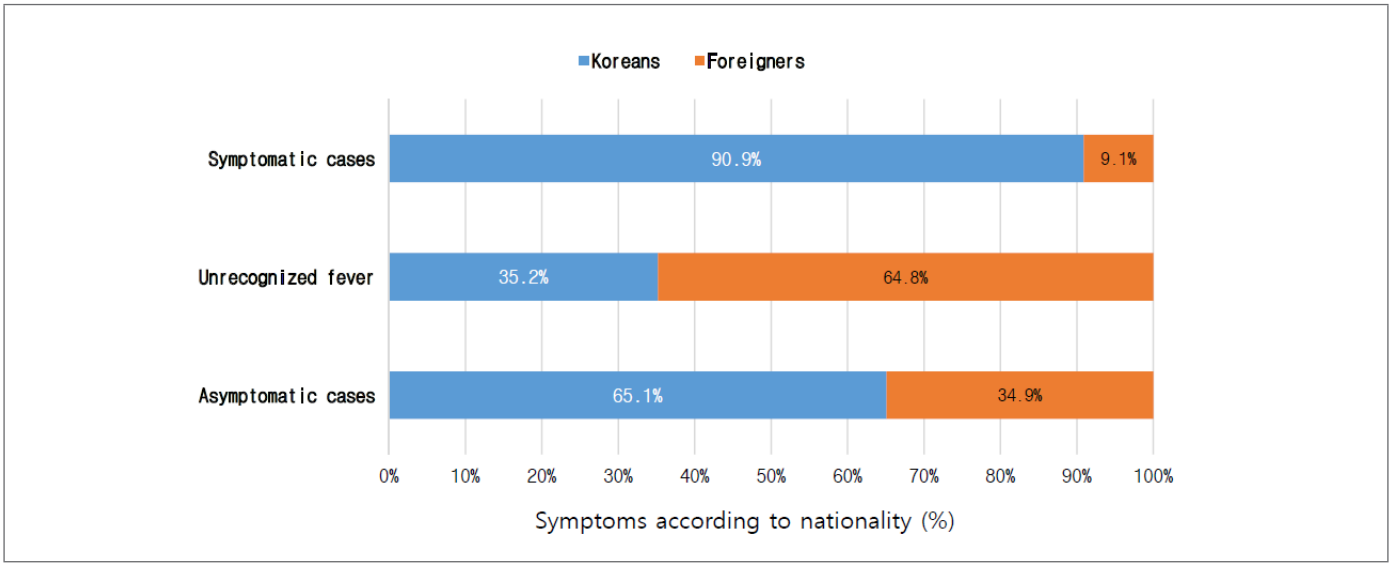

Figure 4. Nationality of patients with confirmed COVID-19 at the Incheon Airport National Quarantine Station in 2021 according to symptom

to worsening of the situation in India, reports of viral variants, and continuous reports of confirmed cases derived from India, the quarantine station expanded the inspections to all travelers inbound from India, on April 21, 2021. We designated India as a quarantine-strengthening country at the overseas-import situation assessment meeting on April 23, 2021. World Health Organization (WHO) designated the B.1.617 variant and other variants from India as global concerns that required analysis and tracking on April 27, 2021. The Central Disease Control Headquarters decided to test all travelers inbound from India in temporary living facilities from April 30, 2021, and from May 4, 2021, the quarantine was strengthened to facility quarantine for 7 days for all travelers inbound from India. The WHO included the B.1.617 variant from India as a major variant on May 11, 2021, and the name was changed to the Delta variant on May 31, 2021 (Figure 5).

At the IANQS, from April 14, 2021, when the targeted quarantine began, until April 30, 2021, when testing was started at all temporary living facilities due to the strengthening of government-level quarantine measures, 30 (68.1%) of 44 Delta variant-confirmed patients were confirmed at the IANQS, which contributed to delaying the initial domestic spread of the variant imported from abroad. Later on, the Delta variant also spread around the world, and the number of locally confirmed cases increased rapidly in Indonesia. While monitoring this closely, the number of confirmed cases imported into the ROK also surged from June (13 new cases per week [May 25-31, 2021] → 22 cases [June 1-7, 2021] → 58 cases [June 8-14, 2021] → 77 cases [June 15-21, 2021]). Hence, targeted quarantine for passengers arriving from Indonesia started on June 10, 2021, but because there are direct flights from Indonesia almost every day and the large number of inbound passengers, it was impossible to conduct a full inspection, such as the measure taken for those arriving from India. Indonesia was designated as a quarantine-strengthening country at the overseas-import situation assessment meeting on June 28, 2021, and on June 30, 2021, 24 confirmed cases from Indonesia were identified at the IANQS (188 entrants, positivity rate of 12.8%). After analyzing this situation, it was confirmed that many passengers who had not submitted a COVID-19 PCR test result, which was mandatory, were boarding inbound flights. Accordingly, from July 4, 2021, boarding restrictions were implemented for all those who had not submitted COVID-19

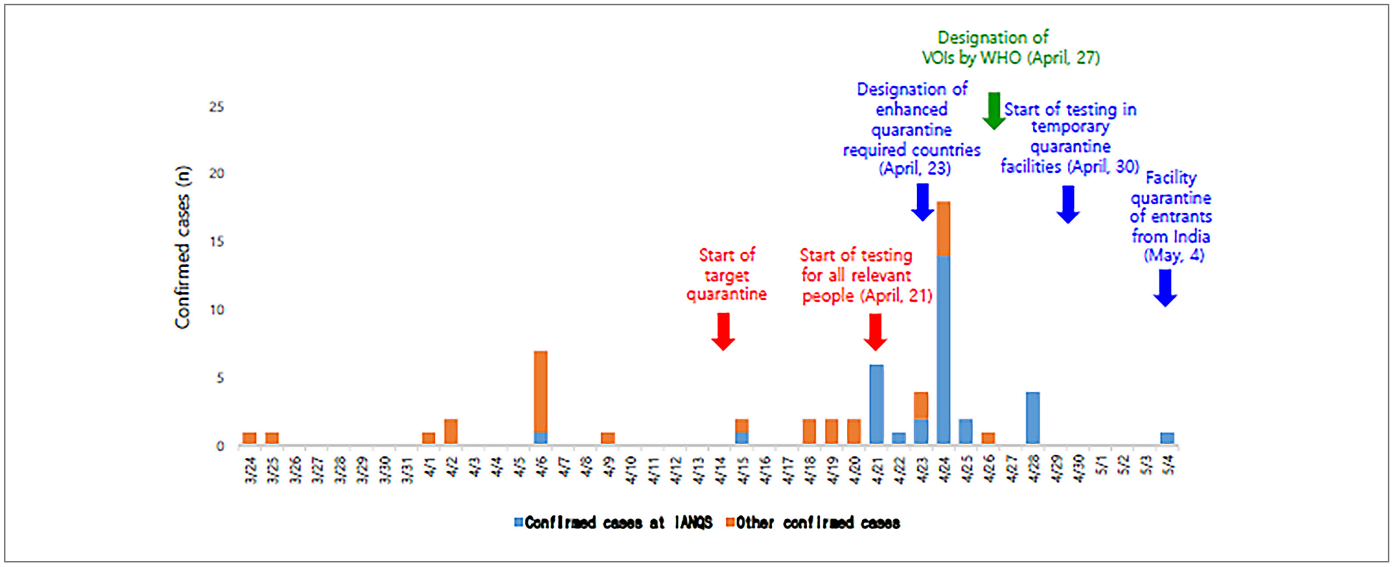

Figure 5. Delta variant occurrence and quarantine response enforcement status according to initial delta variant introduction date

IANQS, Incheon Airport National Quarantine Station; VOIs, Variants of Interest; WHO, World Health Organization

PCR test results. From June 10, 2021, when the targeted quarantine for Indonesia was implemented, until July 4, 2021, when boarding restrictions for those who did not submit PCR results were applied, 792 confirmed cases were imported from abroad, of which 320 were confirmed from Indonesia, accounting for 40.4%. Of the 320 confirmed cases from Indonesia, 160 (50.0%) were confirmed at the IANQS. The number of new local confirmed cases from Indonesia has decreased since peaking on July 15, 2021 [5]. The weekly influx from Indonesia was the highest, at 114, in the week of June 22-28, 2021. However, after implementing the boarding restrictions for those who did not submit PCR test results, on July 4, 2021, the number of weekly inbound confirmed cases from Indonesia gradually decreased, to 35 in the week of July 20-26, 2021. Implementing additional countermeasures according to analysis of the confirmed cases seemed to lead to a decrease in the number of imported cases (Figure 6).

Conclusions

In 2021, the second year of the global COVID-19 pandemic, viral variants appeared, and vaccination against COVID-19 started both domestically in the ROK and abroad. New enhanced measures were introduced, including mandating the submission of negative COVID-19 PCR test results for entry into the ROK. It was observed that the pattern of confirmed patients encountered at the quarantine station changed. This report conveys the characteristics of confirmed cases and changes over the 2021 period at the IANQS. The major change observed from January to December was the decrease in the number of those tested who were targeted for testing at the quarantine station, including those with symptoms, and consequently the decrease in the number of cases confirmed cases at the IANQS relative to all imported confirmed patients. The number of symptomatic patients was highest, at 2,941, in January 2021, when the Alpha variant was spreading. Since March 2021, this number has been below 2,000, and since August 2021, when the number of confirmed cases worldwide had increased due to the rise of the Delta variant, it has decreased to below 1,000. In October 2021, the number

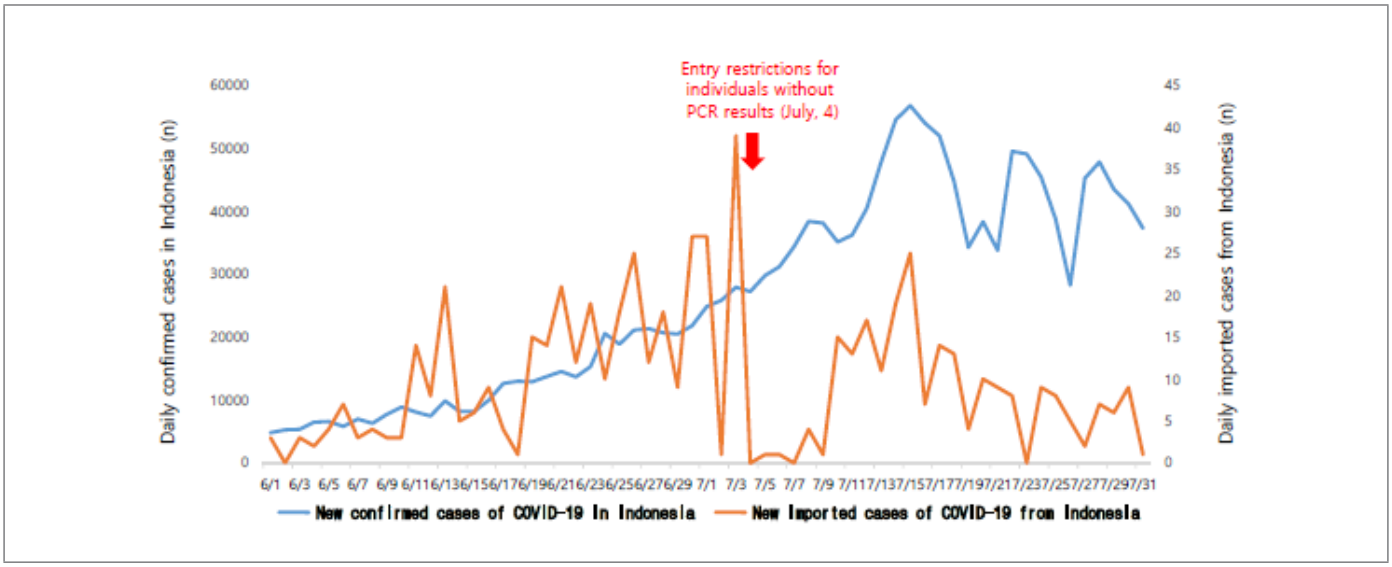

Figure 6. COVID-19 cases from versus those in Indonesia (June to July 2021)

plummeted to 379, the lowest number reported. Although the number of symptomatic cases decreased, the proportion of positive cases confirmed at the IANQS among the total overseas imported cases did not show a decreasing trend until August 2021. In June 2021, the proportion of confirmed cases was highest, at 19.3%, and in July, the number of confirmed cases was 244, the highest ever. However, since then, the number of tested individuals, including those who reported symptoms, has decreased by more than half, from 1,262 in August 2021, to 560 in September 2021. In the second half of the year, except for December, the number of confirmed cases among the approxaimtely 500 individuals tested each month decreased sharply, and the proportion of cases confirmed at the IANQS among the total imported cases also decreased, to an average of 4.3% between September and December 2021. This means that, even though the number of people reporting symptoms has decreased, the number of imported cases has not decreased. There is therefore a need for a discussion on whether the actual number of symptomatic cases has decreased or whether there were missing reports during the quarantine stage. Nevertheless, more publicity is needed for overseas travelers to report their health status during the quarantine stage. After analyzing the confirmed cases, symptoms were reported by only 66.8% of inbound passengers who were identified as confirmed cases. Cases with unrecognized fever accounted for 20.3% of all confirmed cases, indicating that a fever check at the entry stage is one of the main quarantine methods. However, as confirmed cases decreased sharply in the second half of the year, the number of unrecognized fever cases among the confirmed cases decreased significantly. Among the confirmed cases, from January to August 2021, the proportion of symptomatic patients was 64.5%, and the proportion of unrecognized fever cases was 22.2%. Among the confirmed cases, between September and December 2021, 82.5% of the confirmed cases had symptoms, while the proportion of cases with unrecognized fever was as low as 7.2%. In addition, there were differences in reporting of symptoms according to the nationality of the confirmed cases. In the case of foreigners, the number of confirmed cases who had unrecognized fever was higher than that of cases who reported symptoms, indicating a need for more active intervention to identify infected individuals during the quarantine stage.

In 2020, the number of imported cases confirmed at the IANQS was 1,527, out of 5,379 imported cases overall (28.4%), but in 2021, it decreased by more than half to 10.8%. The overall trend observed in 2021, such as a decrease in the proportion of imported cases, a decrease in the number of cases confirmed at the IANQS, and a decrease in the number of those with symptoms, may have been influenced by several factors. These factors include changes in policy, such as the inception of COVID-19 vaccination, the mandatory submission of negative PCR test results after the first year of the COVID-19 pandemic, and a decrease in compliance with quarantine guidelines due to the prolonged nature of the pandemic. In addition, despite this decreasing trend, new variants have arisen, and when the number of confirmed cases with these variants increased, the number of symptomatic cases and cases confirmed at the IANQS also increased with the variants' influx. This requires a more active response when variants first arise.

With the prolongation of the COVID-19 pandemic, quarantine measures are being eased domestically and abroad. Accordingly, the number of cases confirmed at the quarantine station is also changing. It is expected that this report will form a basis for establishing quarantine response measures in the event of a new infectious disease pandemic.

① What was previously known?

Incheon Airport National Quarantine Center started a strengthened quarantine response after the first confirmed case of COVID-19 on January 20, 2020.

By analyzing the confirmed status of imported cases, cases identified as having an epidemiological relationship were targeted for strengthened quarantine regulations, such as stricter fever standards.

② What was newly known?

Of confirmed cases at Incheon Airport National Quarantine Center in 2021, males accounted for 66.0%, nearly twice that of females (34.0%), while by age, those in their 20s and 30s accounted for 47.9%. The proportion of cases with unrecognized fever who had not reported having symptoms exceeded 20%, and the proportion of cases of unrecognized fever among foreigners was higher than that among Koreans. However, since August 2021, the number of symptomatic and confirmed cases has decreased. The proportion of cases confirmed at the quarantine station relative to the total number of imported cases has decreased.

③ What are the implications?

As the COVID-19 pandemic continues, a change in the confirmed cases has been observed at the quarantine station. The results related to identifying infected cases with unrecognized fever and to quarantine measures for foreign nationals are expected to be used as a reference when establishing response plans at the quarantine stage.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

Correspondence to: Chong Hee Choi

Incheon Airport National Quarantine Station, Korea Disease Control and Prevention Agency

dental@korea.kr, 032-740-2727

Submitted: June 17, 2022; Revised: July 6, 2022; Accepted: July 6, 2022

References

1. Korea Centers for Disease Control and Prevention [Internet]. Coronavirus Infectious Disease-19 [cited 2022 May 11] Available from: http://ncov.mohw.go.kr/bdBoardList_Real.do?brdId=1&brdGubun=11&ncvContSeq=&contSeq=&board_id=&gubun=.
2. Jin-Hwa Jang, Shin-Young Park, Seon-Hee Ahn, et al. The main characteristics of the number of confirmed cases of COVID-19 in Korea in 2021. Weekly Health and Illness 2022;15(4):225-234.
3. Centers for Disease Control and prevention. COVID Data Tracker [Internet]. Available from:covid.cdc.gov/covid-data-tracker/#trends_dailycases.
4. Our World In Data. Coronavirus Pandemic(COVID-19) [Internet]. Available from: Ourworldindata.org/covid-vaccinations.
5. World Health Organization. WHO Coronavirus(COVID-19) Dashboard [Internet]. Available from: https://covid19.who.int/data.

This article has been translated from the Public Health Weekly Report (PHWR) Volume 15, Number 27, 2022.