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COVID-19 Special Report 1

Update: Current status and characteristics of variant virus outbreak in Republic of Korea in March 2021

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Abstract

Regarding the Coronavirus Disease 2019 (COVID-19) in Republic of Korea (Korea), the government intends to evaluate the domestic situation and respond to variant viruses by checking current status, dynamics, and the clinical characteristics of the COVID-19 on a monthly basis.

COVID-19 virus variant surveillance was conducted through full-length genome analysis and spike protein gene analysis for positive samples of confirmed cases related to various domestic outbreaks and imported cases.

The epidemiological and clinical characteristics were analyzed using initial and in-depth epidemiological investigation results reported through the Korea Disease Control and Prevention Agency's (KDCA) COVID-19 information management system; the information system for managing confirmed patients, wired monitoring. Clinical characteristics such as severity and the occurred of group cases were analyzed.

Among the number of confirmed cases during the March (13,288), 12.0% of isolates (1,589) was laboratory tested for identification of variants of SARS-CoV-2. A total of 113 accounting for 7.1% of the tested were confirmed as Variants of Concern (VOC). The rate of sequenced isolates of March were increased by 33% compared to that of Feburary. On the other hand, the detection rate of VOCs of March were decreased by 4.3% compared to that of February.

A total of 330 patients of Variants of Concern (VOCs) have been confirmed in Korea to April 5, 2021. The 330 VOC cases were divided into three groups: 501Y.V1, 501Y.V2 and 501Y.V3. 280 cases (84.9%) having the 501Y.V1, 42 cases (12.7%) having the 501Y.V2 (VOC originating from the South Africa), and 8 cases (2.4%) having the 501Y.V3 (VOC originating from the Brazil). Among the 330 cases, there were 204 imported cases (61.8%). The patients' average age was 38.1, By age group, people aged 71 cases (21.5%) each in their 20s, 30s. 233 cases (70.6%) were Korean nationals. 192 cases (58.2%) were symptomatic at diagnosis, 69 cases (20.9%) was mild respiratory symptoms with fever. Most symptoms of VOC patients in Korea were mild, but 9 case of the 501Y.V1 (VOC originating from the UK), and 1 of the 501Y.V2 (VOC originating from the South Africa) patients were severe/critical (including one death). The rate of severe/critical symptoms was 3.0%, and the fatality rate was 0.3%.

A total of 7 VOCs-related group cases were confirmed in March 2021, with 153 confirmed cases (32 laboratory confirmed cases, 121 epidemiological cases) lower than February 910 group cases, 195 confirmed cases [65 Laboratory confirmed cases, 130 epidemiological cases]). There were a total of 19 VOCs-related group cases and 394 confirmed cases (117 laboratory confirmed cases and 277 epidemiological related cases). By gender, there were 223 male cases (56.6%) and 78 female cases (19.8%) aged 20-29 years, and 128 (32.5%) cases were reported in Gyeonggi Province, followed by 120 cases (30.5%) reported in Ulsan Metropolitan City.

Keywords: Coronavirus Disease-19 (COVID-19), Variant of Concern (VOC), Variant of Interest (VOI), Whole Genome Sequencing, Clinical characteristic, Group cases

Introduction

Starting with a massive outbreak of pneumonia of unknown etiology in Wuhan, Hubei Province, China, in December 2019, coronavirus disease 2019 (COVID-19) expanded to become a global pandemic. In Repulic of Korea (hereafter, Korea), since the first confirmed case was reported on January 20, 2020, a total of 105,752 COVID-19 cases have been confirmed as of April 5, 2021. Well over a year has passed since the first outbreak of COVID-19, and the world is now facing another phase of the pandemic due to the emergence of variants. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which is the causative agent of COVID-19, is an RNA virus that continuously accrues mutations in the process of proliferation and transmission. Since most mutations occur in areas that are unfavorable to viral survival or do not affect the characteristics of the virus, they disappear quickly or do not lead to significant changes, but certain mutations contribute to increased transmissibility or cause changes in the characteristics of the virus, such as its pathogenicity. Since it was first reported on September 20, 2020 [1], the UK variant is rapidly spreading worldwide. Recently, various variants that originated in the UK and South Africa have been spreading in many countries, and these variants have been confirmed among international travelers in Korea.

Variants can be identified through genetic analyses. Recently, whole-genome sequencing has become widely used, and various genetic information related to variants is shared worldwide through the Global Initiative on Sharing All Influenza (GISAID) database (DB) on the web and the PANGO Lineages site [2,3].

In Korea, since the first person infected with the UK variant was identified in the quarantine stage in December 2020, a total of 330 people have been confirmed to be infected with the variant as of April 5. The UK variant is reported to have high transmissibility (1.5 times that of the original SARS-CoV-2 virus) [1,4], and the South African and Brazilian variants are also expected to have high transmissibility [5,8]. Although the possibility of immune evasion depending on the site of mutation has been reported [6,7], further research is still needed.

In order to stem the spread of variants in Korea, strengthened measures are enforced: those visiting from countries where variants of concern are prevalent are required to submit a written confirmation of a negative test and remain in a facility or private residence for quarantine after testing. However, it is necessary to establish preemptive measures for patient management based on regular and multilateral analyses of the characteristics of the ever-changing variants.

Therefore, this report aims to describe the results of surveillance of variants of concern that have been confirmed in Korea, data of additional cases of transmission of the variants, and the epidemiological and clinical characteristics of patients infected with the variants. Through steady monitoring and characterization of these variants, we seek to help establish evidence-based response strategies to manage patients infected with variants and to prevent the spread of variants.

Methods

1. Status of variant surveillance in Korea

A. Subjects of analysis

In order to monitor the outbreak of variants in Korea, the Central Quarantine Countermeasures Headquarters has been conducting genetic analyses on representative specimens of domestic cases, considering the epidemiological association

and regional distribution among large-scale and local sporadic outbreaks. For imported cases, genetic analyses are prioritized according to the agency's internal evaluation of the risk of each country based on the prevalence of variants, countries where variants have been identified, and countries with community outbreaks, which can be identified from the GISAID DB. In particular, in order to respond to the influx of variants from abroad and the spread of these variants in Korea, it has also strengthened the surveillance and analyses of variants by referring to the information on variants of concern (VOCs) and variants of interest (VOIs) provided by the World Health Organization (WHO).

B. Variants of concern (VOCs) and variants of interest (VOIs)

On February 25, 2021, the WHO classified VOCs and VOIs to recommend public health interventions against variants. A VOC is defined as a variant with (1) a confirmed increase in transmissibility or unfavorable epidemiological changes; and (2) increased pathogenicity or changes in the severity of clinical presentation; or (3) a confirmed decrease in the effectiveness of diagnostics, vaccines, and therapeutics or classification as a VOC by the WHO in consultation with the SARS-CoV-2 Virus Evolution Working Group. The WHO coordinates laboratory research on VOCs through the research group and conducts rapid risk assessments, communication of relevant information between member states, and revisions of guidelines. A VOI is defined as a variant with (1) a mutation in an amino acid that can show or induce different traits compared to the reference isolate and (2) community transmission, multiple infection cases, a large-scale outbreak, or detection in many countries or classification as a VOI by the WHO through consultation with the research group.

C. WHO's addition of VOIs

On March 30, 2021, the WHO added two variants originating in France and the Philippines to the list of VOIs [1,2]. The Philippine variant (B.1.1.28.3), which was first identified in the Philippines in February 2021, belongs to the B.1.1.28.3 (P.3) lineage of the GR clade, and is characterized by 7 amino acid mutations of the spike (S) protein (L141/G142/V143 deletion, E484K, N501Y, D614G, and P681H), and is currently confirmed in six countries including the Philippines, Japan, and the UK. The B.1.1.28.3 variant shares the E484K mutation, which is found in the South African and Brazilian variants, suggesting the possibility of immune evasion.

The French variant, which was first identified in France in January 2021, belongs to the B.1.616 lineage of the GH clade and is characterized by 9 amino acid mutations of the S protein (G142 deletion, D66H, Y144V, D215G, V483A, H655Y, G669S, Q949R, and N1187D), but additional confirmation and research are needed in relation to its transmissibility, virulence, and immune response.

D. Results of genotyping and surveillance of COVID-19 variants in Korea

As of April 5, 2021, the Korea Disease Control and Prevention Agency (KDCA) conducted genetic analyses of a total of 5,774 cases (4,567 domestic cases and 1,207 imported cases; 5.6% of all confirmed cases in Korea). In particular, since December 28, 2020, when overseas variants were first confirmed among incoming international travelers in Korea, the KDCA has been continuing to expand its analytical capacity: from late February, variant analyses have also been conducted at five regional disease response centers and a genetic analysis targeting only the S protein has been added to the whole-genome analyses, which contributes to the enhanced analytical capacity

by shortening the analysis time (which takes at least 3 to 4 days). As a result, the number of analyses increased by approximately three times in March (1,589 cases are currently being analyzed as of late March) compared to January (587 cases were analyzed) (Figure 1).

As a result of the whole-genome analysis (4,319 cases) of the clades of SARS-CoV-2, various clades have been identified in imported cases, but overall, GH was the most common with 39.6%, followed by GR (31.4%), GRY (11.8%), and G (11.0%). Among imported cases, the proportion of the GRY clade increased significantly from 8.3% in December 2020 to 34.8% in February 2021 and 22.7% in March 2021. Among domestic cases, S and V clades were confirmed in many cases until April 2020, but the GH clade has accounted for the majority (90.7%) since the Itaewon club outbreak in May, indicating that it is still the predominant strain in Korea (Figure 2). The proportion of

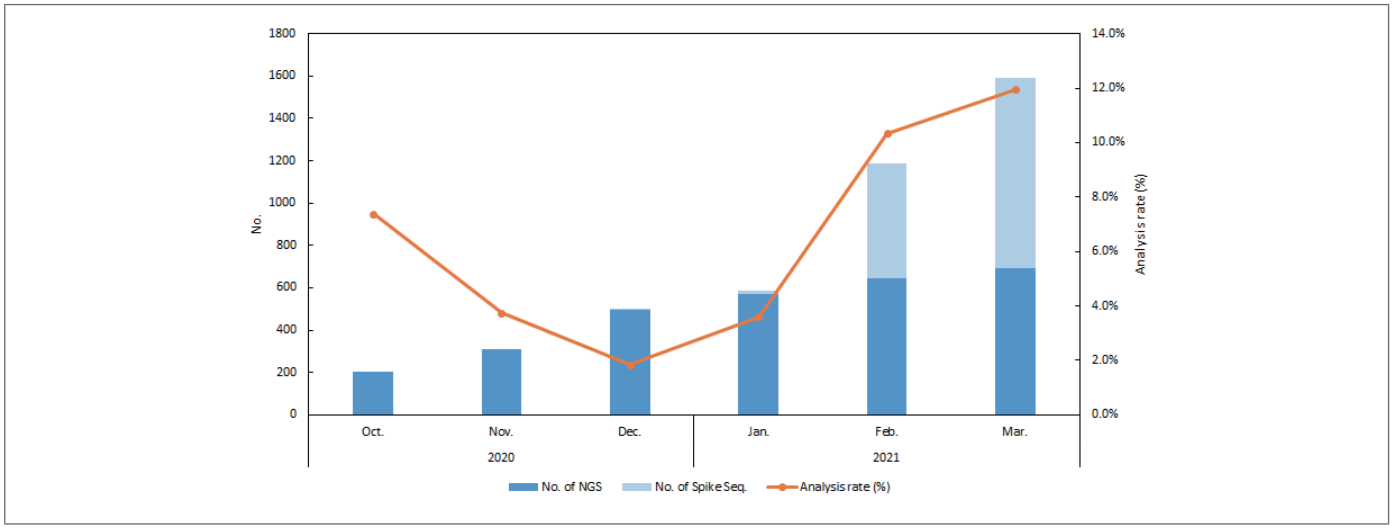


Figure 1. The number of sequenced Coronavirus Disease-19 (COVID-19) virus and the rate of sequenced isolates among the confirmed cases

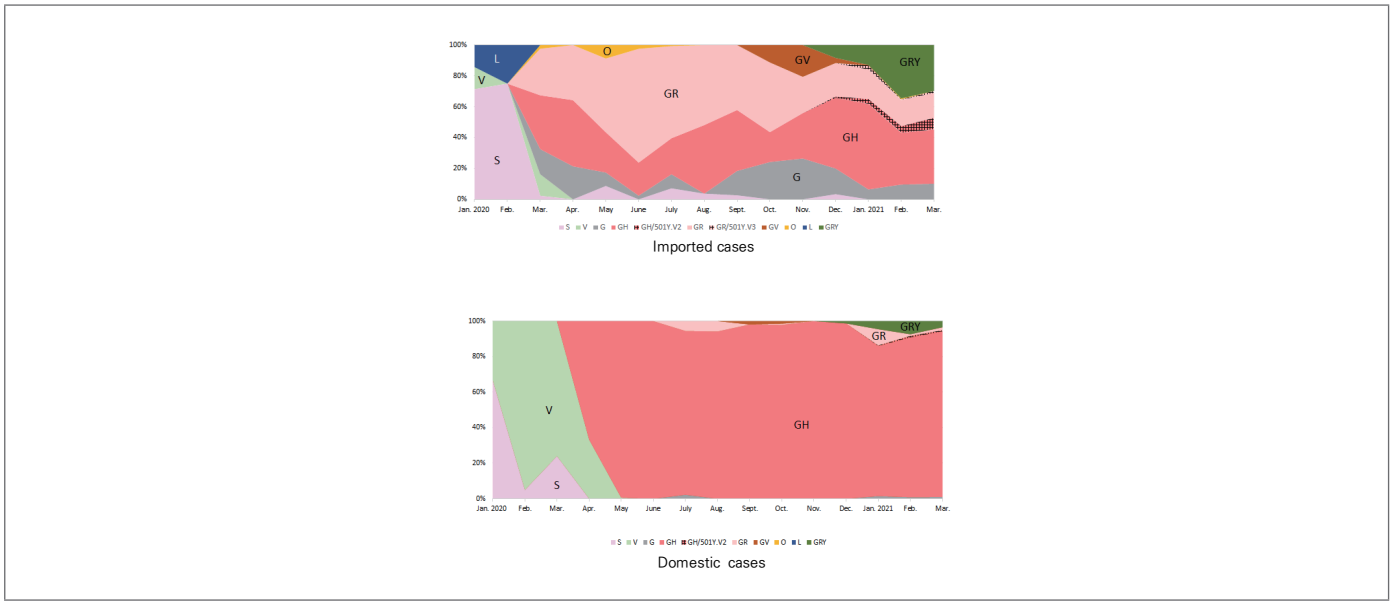


Figure 2. The distribution of the clades of Coronavirus Disease-19 (COVID-19) virus in domestic and imported cases

the GRY clade, which corresponds to the UK variant (501Y.V1), was found to be 1.3% in December 2020, 7.4% in February 2021, and 3.6% in March 2021. There was a significant difference in the clade distribution between the imported cases and domestic cases, and for overseas cases, it seems that the inflow of variants has occurred in proportion to the dominance of VOIs that are rapidly increasing in countries around the world, leading to the identification of the same variants in domestic cases.

From December 2020 to April 5, 2021, VOCs were confirmed in a total of 330 cases (8.5%) in Korea, of which the 501Y.V1 variant was found in 280 cases (7.2%), the 501Y.V2 variant in 42 cases (1.1%), and the 501Y.V3 variant in 8 cases (0.2%). Among the 1,589 specimens analyzed in March, VOCs were found in a total of 113 cases (7.1%), the 501Y.V1 variant in 93 cases (5.9%), the 501Y.V2 variant in 19 cases (1.2%), and the 501Y.V3 variant in 1 case (0.1%).

Since it was first confirmed in 14 cases (2.8%) in December 2020, the 501Y.V1 variant has been identified in 51 cases (8.7%) in January 2021, in 122 cases (10.3%) in February, and in 93 cases (5.9%) in March, indicating that it increased until February, but decreased slightly in March (Table 1, Figure 3). Of the total 280 cases with the 501Y.V1 variant, 164 cases (58.6%) were confirmed in imported cases and 116 cases (41.4%) were confirmed in domestic cases; thus, the variant was more commonly identified in imported cases. The imported cases were confirmed among international travelers from a total of 32 countries including Hungary (37 cases), the United Kingdom (19 cases), Poland (14 cases), UAE (12 cases), and Pakistan (12 cases) (Table 2). As for the domestic cases, the largest number of cases (48 cases, 10.9%) was detected in the Gyeongnam region (7 cases [9.5%] in January 2021, 19 cases [15.7%] in February, and 22 cases [11.6%] in March). As for the 501Y.V2 variant, 32 of 42 cases (76.2%) were related to the entry of international travelers from a total of 14 countries, including Tanzania (8 cases), Bangladesh (5), and UAE (4 cases). All 8 cases with the 501Y.V3 variant were international travelers from a total of 4 countries including Brazil (5 cases), Canada (1 case), and Saudi Arabia (1 case) (Table 2).

The L452R.V1 variant, which is a VOI that originated in California, USA, has been identified in 193 cases since December 2020 (13 cases in December 2020 [2.6%], 21 cases in January 2021 [3.6%], 59 cases [5.0%] in February, and 100 cases [6.2%] in March), of which 29 cases were confirmed among international travelers from the USA (27 cases) and Mexico (2 cases), and among the 164 domestic cases with the variant, the largest number of cases (96 cases, 33.9%) was identified in the Gyeongbuk region. Of the 6 cases with the B.1.526 variant originating in New York, USA, 4 cases were confirmed among international travelers from the USA after February 2021. The 484K.V3 variant was confirmed in 7 cases among international travelers entering the country from Nigeria (4 cases) and Sudan (1 case) after February 2021, and the B.1.1.28.3 variant was confirmed in the international travelers from the Philippines (5 cases) after February 2021, indicating that the inflow of several variants has been confirmed during the surveillance process since February. The B.1.616 variant, which originated in France, has not been identified yet in Korea.

In recent months, several variants have spread rapidly around the world, raising concerns about the inflow of variants into Korea. To respond to this, it is necessary to steadily conduct surveillance and analyses of variants, as well as monitoring the occurrence of variants in each country.

Table 1. The regional occurrence of Coronavirus Disease-19 (COVID-19) variants in the Republic of Korea (Up to April 5, 2021)

		Region		Number of VOC (Detection rate, %)*				
				Total	Dec. 2020	Jan. 2021	Feb. 2021	Mar. 2021
Variant of Concern (VOC)	Total number of VOC			330 (8.5%)	15 (3.0%)	67 (11.4%)	135 (11.4%)	113 (7.1%)
	501Y.V1 (GRY)		Total	280 (7.2%)	14 (2.8%)	51 (8.7%)	122 (10.3%)	93 (5.9%)
		Domestic	Subtotal	116 (3.7%)	4 (1.1%)	21 (6.2%)	43 (4.5%)	48 (3.4%)
			Capital	42 (2.7%)	4 (1.8%)	8 (4.8%)	14 (3.3%)	16 (2.2%)
			Kyungpook	15 (5.3%)	0 (0.0%)	0 (0.0%)	5 (4.9%)	10 (8.4%)
			Kyungnam	48 (10.9%)	0 (0.0%)	7 (9.5%)	19 (15.7%)	22 (11.6%)
			Honam	11 (3.1%)	0 (0.0%)	6 (11.1%)	5 (3.5%)	0 (0.0%)
			Chungcheong	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Imported		164 (21.8%)	10 (8.3%)	30 (12.0%)	79 (35.4%)	45 (28.5%)
	501Y.V2 (GH)		Total	42 (1.1%)	1 (0.2%)	10 (1.7%)	12 (1.0%)	19 (1.2%)
		Domestic		10 (0.3%)	0 (0.0%)	1 (0.3%)	4 (0.4%)	5 (0.3%)
		Imported		32 (4.3%)	1 (0.8%)	9 (3.6%)	8 (3.6%)	14 (8.9%)
	501Y.V3 (GR)		Total	8 (0.2%)	0 (0.0%)	6 (1.0%)	1 (0.1%)	1 (0.1%)
		Domestic		0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Imported		8 (1.1%)	0 (0.0%)	6 (2.4%)	1 (0.4%)	1 (0.6%)
Variant of Interest (VOI)	Total number of VOI			211 (5.5%)	13 (2.6%)	21 (3.6%)	69 (5.8%)	108 (6.8%)
	452R.V1 (GH)		Total	193 (5.0%)	13 (2.6%)	21 (3.6%)	59 (5.0%)	100 (6.2%)
		Domestic	Subtotal	164 (5.3%)	11 (2.9%)	4 (1.2%)	55 (5.7%)	94 (6.4%)
			Capital	54 (3.5%)	11 (5.0%)	3 (1.8%)	11 (2.6%)	29 (3.9%)
			Kyungpook	96 (33.9%)	0 (0.0%)	1 (4.5%)	37 (36.3%)	58 (48.7%)
			Kyungnam	4 (0.9%)	0 (0.0%)	0 (0.0%)	1 (0.8%)	3 (1.6%)
			Honam	4 (1.1%)	0 (0.0%)	0 (0.0%)	4 (2.8%)	0 (0.0%)
			Chungcheong	6 (1.2%)	0 (0.0%)	0 (0.0%)	2 (1.1%)	4 (1.6%)
		Imported		29 (3.9%)	2 (1.7%)	17 (6.8%)	4 (1.8%)	6 (3.8%)
	B.1.526 (GH)		Total	6 (0.2%)	0 (0.0%)	0 (0.0%)	3 (0.3%)	3 (0.2%)
		Domestic		2 (0.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.1%)
		Imported		4 (0.5%)	0 (0.0%)	0 (0.0%)	3 (1.3%)	1 (0.6%)
	484K.V3 (G)		Total	7 (0.2%)	0 (0.0%)	0 (0.0%)	5 (0.4%)	2 (0.1%)
		Domestic		0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Imported		7 (0.9%)	0 (0.0%)	0 (0.0%)	5 (2.2%)	2 (1.3%)
	B.1.1.28.3 (G)		Total	5 (0.1%)	0 (0.0%)	0 (0.0%)	2 (0.2%)	3 (0.2%)
		Domestic		0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
		Imported		5 (0.7%)	0 (0.0%)	0 (0.0%)	2 (0.9%)	3 (1.9%)

* Detection rate of VOC (%) = (number of VOC / number of sequenced virus) ×100

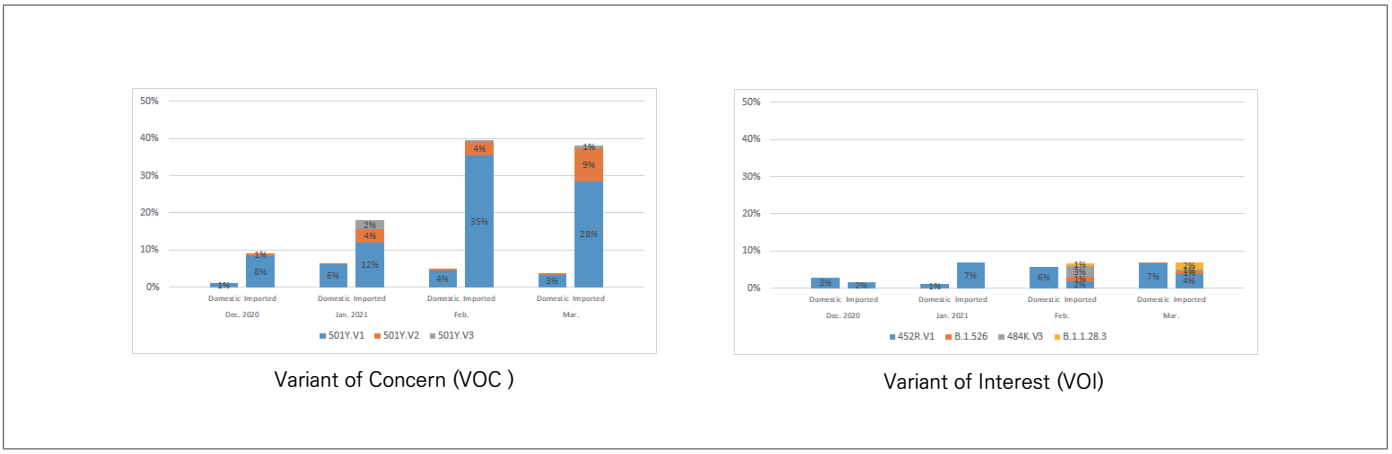


Figure 3. Monthly distribution of Coronavirus Disease-19 (COVID-19) variants

Table 2. The routes in which the Coronavirus Disease-19 (COVID-19) variants were identified in the Republic of Korea (Up to April 5, 2021)

Classification		Route	No. of countries	Countries
Variant of Concern (VOC)	501Y.V1 (GRY)	Domestic	-	A total of 116
		Imported	32	**A total of 164 :** Hungary (37), United Kingdom (19), Poland (14), UAE (12), Pakistan (12), Ghana (10), United States (9), Jordan (8), Philippines (7), France (4), German (3), Serbia (3), Slovakia (2), Iraq (2), Czechia (2), Mongolia (2), Montenegro (2), India (2), Netherlands (1), Ukraine (1), Bahrain (1), Kazakhstan (1), Morocco (1), Maldives (1), Nigeria (1), Norway (1), China (1), Libya (1), Ethiopia (1), Russia (1), Brazil (1), Denmark (1)
	501Y.V2 (GH)	Domestic	-	A total of 10
		Imported	7	**A total of 32 :** Tanzania (8), Bangladesh (5), UAE (4), Mexico (3), South Africa (2), Philippines (2), Equatorial Guinea (1), Cameroon (1), Burundi (1), Zimbabwe (1), Malawi (1), Zambia (1), United States (1), Bahrain (1)
	501Y.V3 (GR)	Domestic	-	-
		Imported	4	**A total of 8 :** Brazil (5), Canada (1), Saudi Arabia (1), United States (1)
Variant of Interest (VOI)	452R.V1 (GH)	Domestic	-	A total of 164
		Imported	2	**A total of 29 :** United States (27), Mexico (2)
	B.1.526 (GH)	Domestic	-	A total of 2
		Imported	1	**A total of 4 :** United States (4)
	484K.V3 (G)	Domestic	-	-
		Imported	4	**A total of 7 :** Nigeria (4), Sudan (1), UAE (1), Cameroon (1)
	B.1.1.28.3 (G)	Domestic	-	-
		Imported	1	**A total of 5 :** Philippines (5)

2. Clinical and epidemiological characteristics of patients with VOCs

A. Analysis subjects and methods

After the first confirmed case infected with a variant in Korea in December 2020, 330 confirmed cases of VOCs were analyzed, including 168 patients 501Y.V1, 501Y.V2, and 501Y.V3 confirmed by April 5, in addition to the 162 patients with VOCs who had been included in the first round of analysis until March 1, 2021. The 330 subjects included 280 people with the 501Y.V1, 42 people with the 501Y.V2, and 8 people with the 501Y.V3. The frequency analysis and chi-square test of epidemiological investigation records and clinical data of patients with basic variants were performed using SPSS, and epidemiologic and clinical characteristics were analyzed.

Result

1. Route of infection and detection

The route of infection and detection was investigated among a total of 330 people confirmed to have 501Y.V1, 501Y.V2, and 501Y.V3 from December 2020 to April 5, 2021. Regarding the route of infection, 204 patients (61.8%) were imported cases, of whom 116 patients (35.2%) were confirmed during home quarantine after entry, followed by 85 patients (25.7%) confirmed during entry screening and 3 patients (0.9%) confirmed through post-entry diagnostic tests. Among the 126 patients (38.2%) with locally acquired infections, the route of infection was contact with confirmed cases in 116 patients (35.2%) and under investigation in the remaining 10 patients (3.0%) (Table 3).

2. Epidemiological characteristics

A. 501Y.V1

Among the total confirmed cases of VOCs in Korea, the

Table 3. Route of infection and detection of VOCs in Republic of Korea

Unit: n (%)

	Total	Dec 2020				Jan 2021				Feb 2021				Mar 2021			
		Total	501Y.V1	501Y.V2	501Y.V3	Total	501Y.V1	501Y.V2	501Y.V3	Total	501Y.V1	501Y.V2	501Y.V3	Total	501Y.V1	501Y.V2	501Y.V3
Total	330 (100%)	15	14	1	0	67	51	10	6	135	122	12	1	113	93	19	1
Imported cases	204 (61.8%)	11	10	1	0	45	30	9	6	88	79	8	1	60	45	14	1
At entry screening	85 (25.7%)	5	4	1	0	19	13	4	2	36	32	4	0	25	18	6	1
During home quarantine	116 (35.2%)	6	6	0	0	26	17	5	4	49	44	4	1	35	27	8	0
Others*	3 (0.9%)	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0
Locally-acquired cases	126 (38.2%)	4	4	0	0	22	21	1	0	47	43	4	0	53	48	5	0
Contact with confirmed cases	116 (35.2%)	4	4	0	0	21	20	1	0	42	39	3	0	49	44	5	0
Under investigation (unclassified)	10 (3.0%)	0	0	0	0	1	1	0	0	5	4	1	0	4	4	0	0

* Home quarantine exemption

501Y.V1 was the most common. Of the total 330 patients, 280 patients (84.9%) had the 501Y.V1, which was more prevalent in men (175 patients, 62.5%) than women (105 patients, 37.5%). The largest number of people was in the age group of 20 to 29 years (62 patients, 22.1%), followed by 30 to 39 years (57 patients, 20.4%) and 40 to 49 years (53 patients, 18.9%). The most frequently used isolation treatment facilities were hospitals (151 patients, 53.9%), followed by community treatment centers (126 patients, 45.0%) and others (2 patients, 0.7%). There were 9 (3.3%) critical/severe patients, including death (Table 4).

B. 501Y.V2

The 501Y.V2 was found in 42 (12.7%) of the 330 patients with VOCs. There were more men (27 patients, 64.3%) than women (15 patients, 35.7%), and the most common age group was 30 to 39 years (11 patients, 26.1%), followed by 20 to 29 years and 40 to 49 years, with 7 patients (16.7%) each. The most commonly used isolation treatment facilities were residential treatment centers (26 patients, 61.9%), followed by hospitals (16 patients, 38.1%). There was one (2.4%) with critical/severe patient (Table 4).

C. 501Y.V3

Of the total of 330 patients confirmed to have VOCs in Korea, 8 (2.4%) had the 501Y.V3. There were more men (6 patients, 75.0%) than women (2 patients, 25.0%), and the number

Table 4. Epidemiological characteristics of VOCs in Republic of Korea

Unit: n (%)

	Total	501Y.V1	501Y.V2	501Y.V3	*p*-value**
Total	330 (100.0%)	280 (84.9%)	42 (12.7%)	8 (2.4%)	
Gender					
Male	208 (63.0%)	175 (62.5%)	27 (64.3%)	6 (75.0%)	0.758
Female	122 (37.0%)	105 (37.5%)	15 (35.7%)	2 (25.0%)	
Nationality					
Koreans	233 (70.6%)	198 (70.7%)	27 (64.3%)	8 (100.0%)	0.126
Foreigners	97 (29.4%)	82 (29.3%)	15 (35.7%)	0 (0.0%)	
Age group(yrs)					
0–9	17 (5.1%)	14 (5.0%)	3 (7.1%)	0 (0.0%)	
10–19	21 (6.4%)	19 (6.8%)	2 (4.8%)	0 (0.0%)	
20–29	71 (21.5%)	62 (22.1%)	7 (16.7%)	2 (25.0%)	
30–39	71 (21.5%)	57 (20.4%)	11 (26.1%)	3 (37.5%)	
40–49	60 (18.2%)	53 (18.9%)	7 (16.7%)	0 (0.0%)	0.229
50–59	51 (15.5%)	48 (17.1%)	2 (4.8%)	1 (12.5%)	
60–69	29 (8.8%)	19 (6.8%)	8 (19.0%)	2 (25.0%)	
70–79	7 (2.1%)	5 (1.8%)	2 (4.8%)	0 (0.0%)	
80+	3 (0.9%)	3 (1.1%)	0 (0.0%)	0 (0.0%)	
Isolation place					
Residential treatment center	157 (47.6%)	126 (45.0%)	26 (61.9%)	5 (62.5%)	
Hospital	170 (51.5%)	151 (53.9%)	16 (38.1%)	3 (37.5%)	0.518
Home treatment	1 (0.3%)	1 (0.4%)	0 (0.0%)	0 (0.0%)	
Others*	2 (0.6%)	2 (0.7%)	0 (0.0%)	0 (0.0%)	

* Death before COVID-19 confirmation, Unmanaged case; ** χ^2 test

of patients aged 30 to 39 years was 3 (37.5%), those aged 20 to 29 years and 60 to 69 years were 2 (25.0%) each, and 1 patient (12.5%) was in the age range of 50 to 59 years. Residential treatment centers were the most common isolation treatment facilities, with 5 patients (62.5%), and hospitals were used in 3 patients (37.5%). There were no critical/severe patients including death (Table 4).

3. Clinical characteristics

Among the patients with VOCs in Korea, 192 patients (58.2%) reported symptoms and 138 patients (41.8%) were asymptomatic. Excluding asymptomatic cases, the most common symptom among the symptomatic cases was mild respiratory symptoms (cough, etc.) unaccompanied by fever in 69 patients (20.9%). There were 43 patients (13.0%) who complained of mild respiratory symptoms with fever, 28 patients (8.5%) had fever only, 24 patients (7.3%) had other symptoms only, 23 patients (7.0%) had other symptoms (chills, abdominal pain, etc.) accompanied by fever, and 5 patients (1.5%) lost their sense of smell or taste.

In Korea, patients who undergo isolation with high-flow oxygen therapy, a ventilator, extracorporeal membrane oxygenation (ECMO), and continuous renal replacement therapy (CRRT) are classified as critical/severe. The main complaints of the patients with VOCs in Korea were mostly mild, but 9 (including 1 death) of those with the 501Y.V1 and 1 of those with the 501Y.V2 were critical/severe. The proportion of critical/severe (including death) among the patients with VOCs in Korea was 3.0% and the fatality rate was 0.3% (Table 5).

Table 5. Clinical characteristics of VOCs in Republic of Korea

Unit: n (%)

	Total	501Y.V1	501Y.V2	501Y.V3	*p*-value*
Total	330 (100.0%)	280 (84.9%)	42 (12.7%)	8 (2.4%)	
Symptom					
Symptomatic	192 (58.2%)	167 (59.6%)	20 (47.6%)	5 (62.5%)	0.327
Asymptomatic	138 (41.8%)	113 (40.4%)	22 (52.4%)	3 (37.5%)	
Symptom classification					
Fever only	28 (8.5%)	17 (6.1%)	9 (21.4%)	2 (25.0%)	0.021
Fever and respiratory symptoms	43 (13.0%)	41 (14.6%)	2 (4.8%)	0 (0.0%)	
Fever and other symptoms	23 (7.0%)	20 (7.1%)	3 (7.1%)	0 (0.0%)	
Respiratory symptoms without fever	69 (20.9%)	64 (22.9%)	3 (7.1%)	2 (25.0%)	
Acute loss of sense of smell or taste	5 (1.5%)	4 (1.4%)	1 (2.4%)	0 (0.0%)	
Others	24 (7.3%)	21 (7.5%)	2 (4.8%)	1 (12.5%)	
Asymptomatic	138 (41.8%)	113 (40.4%)	22 (52.4%)	3 (37.5%)	
Severity					
Death	1 (0.3%)	1 (0.4%)	0 (0.0%)	0 (0.0%)	0.979
Severe/critical	9 (2.7%)	8 (2.9%)	1 (2.4%)	0 (0.0%)	
Milld/ asymptomatic	320 (97.0%)	271 (96.7%)	41 (97.6%)	8 (100.0%)	

* χ^2 test

4. Current status of large-scale outbreaks related to VOCs

In March 2021, there were 7 confirmed large-scale outbreaks of VOCs and 153 confirmed cases related to VOCs (32 laboratory-confirmed cases and 121 epidemiologically related cases), exceeding the corresponding numbers confirmed in January (2 large-scale outbreaks; 46 confirmed cases [20 laboratory-confirmed cases and 26 epidemiologically related cases]), but reflecting lower numbers than those reported in February (10 large-scale outbreaks; 195 confirmed cases [65 laboratory-confirmed cases and 130 epidemiologically related cases]).

There were a total of 19 large-scale outbreaks of VOCs and 394 confirmed cases (117 laboratory-confirmed cases and 277 epidemiologically related cases), and the variant responsible for the 19 large-scale outbreaks was 501Y.V1 in 17 cases (89.5%) and 501Y.V2 in 2 cases (10.5%) (Table 6).

Regarding the demographic characteristics of the 394 cumulative confirmed cases in large-scale outbreaks of VOCs, there were more men (233 people, 56.6%) than women (171 people, 43.4%). The largest number of people was in the age range of 20 to 29 years (78 people, 19.8%), followed by 50 to 59 years (75 people, 19.0%), 30 to 39 years (65 people, 16.5%), 40 to 49 years, and 0 to 9 years (48 people, 12.2%). By region, Gyeonggi-

Table 6. Characteristics of variant of concern (VOC) viruses by group case

		Patient occurrence period	Occurrence status			Virus type
			Total	Laboratory confirmed cases	Epidemiological cases	
January	Group 1	1.7–1.29.	38	13	25	501Y.V1
	Group 2	1.29–1.30.	8	7	1	501Y.V1
January subtotal (Group 1 – Group 22)			**46**	**20**	**26**	
February	Group 3	2.10–2.23.	31	7	24	501Y.V1
	Group 4	2.7–2.17.	7	2	5	501Y.V1
	Group 5	2.4–2.5.	5	3	2	501Y.V1
	Group 6	2.3–2.13.	11	3	8	501Y.V1
	Group 7	2.22–2.23.	3	3	0	501Y.V2
	Group 8	2.11–3.1.	62	24	38	501Y.V1
	Group 9	2.16–3.15.	24	1	23	501Y.V1
	Group 10	2.18–3.3.	18	3	15	501Y.V1
	Group 11	2.27–3.21.	25	14	11	501Y.V1
	Group 12	2.24–3.16.	9	5	4	501Y.V1
February subtotal (Group 3 – Group 12)			**195**	**65**	**130**	
March	Group 13	3.6–3.16.	80	12	68	501Y.V1
	Group 14	3.8–3.10.	8	2	6	501Y.V1
	Group 15	3.20–3.23.	6	1	5	501Y.V1
	Group 16	3.17–3.25.	40	9	31	501Y.V1
	Group 17	2.24–3.12.	6	6	0	501Y.V2
	Group 18	3.19–3.21.	5	1	4	501Y.V1
	Group 19	3.21–3.24.	8	1	7	501Y.V1
March subtotal (Group 13 – Group 19)			**153**	**32**	**121**	
Total			**394**	**117**	**277**	

do was the hardest-hit (128 people, 32.5%), followed by the Ulsan metropolitan city (120 people, 30.5%), Gyeongsangnam-do (51 people, 12.9%), and Gyeongsangbuk-do (23 people, 5.8%).

In March 2021, the number of confirmed cases in large-scale outbreaks related to the VOCs was 153. The largest number of people was in 20-29 years (42 people, 27.5%), followed by 30-39 years (26 people, 17.0%), 50-59 years (22 people, 14.4%), and 40 to 49 years (21 people, 13.7%). By region, the most prevalent areas were the Ulsan metropolitan city (75 people, 49.0%) and Gyeonggi-do (55 people, 35.9%) (Table 7).

Table 7. Demographic characteristics of patients with variant of concern virus population cases (including epidemiological cases)

Unit: n (fraction, %)

	March	Total
	N (%)	N (%)
Total	153 (100.0)	394 (100.0)
Sex		
Male	90 (58.8)	223 (56.6)
Female	63 (41.2)	171 (43.4)
Age group		
0–9	5 (3.3)	48 (12.2)
10–19	12 (7.8)	33 (8.4)
20–29	42 (27.5)	78 (19.8)
30–39	26 (17.0)	65 (16.5)
40–49	21 (13.7)	48 (12.2)
50–59	22 (14.4)	75 (19.0)
60–69	19 (12.4)	34 (8.6)
70–79	6 (3.9)	10 (2.5)
80+	0 (0.0)	3 (0.8)
Region		
Seoul	9 (5.9)	14 (3.6)
Busan	2 (1.3)	13 (3.3)
Daegu	1 (0.7)	3 (0.8)
Incheon	0 (0.0)	22 (5.6)
Gwangju	0 (0.0)	0 (0.0)
Daejeon	0 (0.0)	0 (0.0)
Ulsan	75 (49.0)	120 (30.5)
Sejong	0 (0.0)	0 (0.0)
Gyeonggi	55 (35.9)	128 (32.5)
Gangwon	0 (0.0)	3 (0.8)
Chungbuk	0 (0.0)	0 (0.0)
Chungnam	0 (0.0)	0 (0.0)
Jeonbuk	0 (0.0)	0 (0.0)
Jeonnam	0 (0.0)	17 (4.3)
Gyeongbuk	0 (0.0)	23 (5.8)
Gyeongnam	11 (7.2)	51 (12.9)
Jeju	0 (0.0)	0 (0.0)

Conclusion

The Central Quarantine Countermeasures Headquarters has continued to analyze the genetic characteristics of COVID-19 through whole-genome genetic analyses and has expanded its analytical capacity, leading to the identification of the VOCs (501Y.V1, 501Y.V2, and 501Y.V3) and VOIs (452R.V1, B.1.526, 484K.V3, and B.1.1.28.3). In recent months, several variants have been spreading rapidly abroad, thereby raising concerns about the inflow of these variants into Korea. To respond to this situation, it is necessary to perform ongoing surveillance and analyses of the variants, as well as monitoring the occurrence of variants by country.

Although VOCs have been reported to have increased transmissibility and fatality rate, no significant difference was noted in the severity rate and fatality rate between the patients with the existing virus and those with the VOCs in Korea. Nonetheless, studies on these variants are in progress, and infections with the variants continue to occur in Korea; thus, ongoing monitoring and analyses of the clinical characteristics of the patients infected with variants are necessary.

The 501Y.V1 variant was confirmed to be responsible for most of the large-scale outbreaks of VOCs in Korea. VOCs, including the 501Y.V1 variant, have been found in many countries around the world, and increased transmissibility and risk of death and the possibility of immune evasion have been reported [1]. In order to suppress the COVID-19 outbreak, Korea has been making efforts to prevent further spread through vaccinations and epidemiological investigations. In order to strengthen the management of variants, related information has been shared with local governments, testing has been expanded to the contacts of confirmed patients, and the surveillance of variants has been strengthened in local communities including areas with large concentrations of foreigners.

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Conflict of Interest

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

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① What was known?

Since 162 people were confirmed to be infected with VOCs in Republic of Korea (Korea) as of March 31, 2021, 168 people have been additionally identified to have VOCs, which brings the total number of people with VOCs to 330, including 280 people with the UK variant, 42 people with the South African variant, and 8 people with the Brazilian variant.

② What does this study add?

Since it was first identified in 15 cases (3.0%) in December 2020, the 501Y.V1 variant has been confirmed in 51 cases (8.7%) in January 2021, 127 cases (10.7%) in February, and 87 cases (5.2%) in March. The L452R.V1 variant was also confirmed in 14 cases (2.8%) in December 2020, 21 cases (3.6%) in January 2021, 60 cases (5.1%) in February, and 98 cases (6.2%) in March. In addition, the B.1.1.28.3 variant, which was first identified in the Philippines, has been confirmed in 5 travelers from the Philippines since February 2021. Among the 330 people with variants, there were more men (208, 63.0%) than women (122, 37.0%). By age group, 20 to 29 years and 30 to 39 years were the most common with 71 people (21.5%) each and the average age was 38.1 years. Among the patients with VOCs in Korea, 192 (58.2%) were symptomatic and 138 (41.8%) were asymptomatic, and the largest number of people (69 cases, 20.9%) complained of only mild respiratory symptoms without fever. Nine severe cases (including 1 death) occurred among those with the 501Y.V1, as well as 1 critical/severe of the 501Y.V2.

③ What are the implications?

In order to stem the inflow and spread of variants in Korea, it is necessary to provide rapid response measures by strengthening the surveillance of variants and to establish a scientific basis through the analysis of the characteristics of variants. In particular, an evidence-based response strategy for the management of patients with variants should be established by comparing and analyzing the severity and fatality rates based on regularly monitoring the clinical conditions of patients with variants.

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COVID-19 Special Report 2

Analysis of transmission period among patients with 501Y.V1 in Republic of Korea

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Abstract

After being confirmed as 501Y.V1 on September 20, 2020, about 125 countries have confirmed the 501Y.V1, and the recent COVID-19 pandemic in Brazil has become serious due to the 501Y.V3[1]. A total of 330 Variant of Concern (VOCs) were confirmed by April 5, after the first case was confirmed in Republic of Korea in December 2020. Since January 2, 2021, the Central Disease Control Headquarters has been managing VOCs and suspects by applying "the enhanced case management guidelines" to prevent the inflow and spread of variant in Korea. Therefore, we decided to derive an appropriate isolation period based on scientific grounds for analysis, which accounts for guidance on discharging patients with 501Y.V1 in Korea.

Except for factors such as severe/critical, death, etc. that may affect the transmission period; 501Y.V1 group was selected for 78 and Non-501Y.V1 group for 311 (May, 2020). Further analysis was conducted on 522 501Y.V1 and 522 Non-501Y.V1 group (May, 2020) including 211 unconfirmed C_t values in Polymerase Chain Reaction (PCR) tests during isolation, 851 Non-501Y.V1 group (April, 2020) to comprised the difference between the period of PCR negative conversion. The distribution of C_t values in PCR tests was similar during isolation between the 501Y.V1 group and the Non-501Y.V1 group (May, 2020), and within five days of symptoms or confirmed date, 10 samples with C_t value (RdRp) below 24.68 were negative, and the remaining 30 samples were negative.

In addition, the median was 30 days for 501Y.V1 group, 33 days for non-501Y.V1 group (April, 2020) and 26 days for non-501Y.V1 group (May, 2020) with differences in the distribution of infection routes. The difference in period of PCR negative conversion is expected to take into account the impact of patient characteristics (such as underlying disease and age) according to infection routes rather than infection with COVID-19 variant.

The analysis is meaningful in that it has been able to lay the groundwork for clinical-based guidance on discharging patients as a way to manage patients with the 501Y.V1 by confirming that transmission period of the 501Y.V1 is no different from the COVID-19. In the future, it is necessary to establish a scientific evidence-based strategy to respond to VOCs by continuously analyzing the epidemiological and clinical information of patients with 501Y.V2., 501Y.V3. as well as from the 501Y.V1.

Keywords: Covid-19, Variant of Concern (VOC), 501Y.V1, Transmission period

Introduction

It has been a year since coronavirus disease 2019 (COVID-19) pandemic began, and the world is facing another rise in cases due to variants of COVID-19. After the 501Y.V1 (originating from the United Kingdom) was confirmed on September 20, 2020, 501Y.V1 has been confirmed in approximately 125 countries, and the recent addition of 501Y.V3 (originating from Brazil) has further exacerbated the situation [1]. Since the first detection of 501Y.V1 in Republic of Korea (hereafter, Korea) during quarantine in December 2020, as of April 27, 2021, 535 cases of variants of concern (VOCs) have been confirmed.

To prevent the inflow and spread of variants in Korea, since January 2, 2021, the Central Disease Control Headquarters (CDCH) has been managing VOCs and suspected cases using the Enhanced Case Management Guidelines. According to the strengthened management plan, confirmed patients from abroad are isolated and controlled in a single room, and additional test-based guidance is required for confirmed or suspected cases of VOCs, as these patients are only discharged after two consecutive negative polymerase chain reaction (PCR) tests.

However, the mandatory enforcement of the test-based guidance on discharging patients has inevitably lengthened the isolation period for confirmed and suspected cases of VOCs. This has led to increased financial instability and psychological suffering for patients and less efficiency in the use of medical resources.

Hence, by analyzing the length of the transmission period of 501Y.V1, which is the most common VOC in Korea, the aim of this study was to derive an appropriate end isolation period and establish scientific evidence-based guidance for discharging patients.

Methods

This research aimed to verify the differences in the length of transmission period between 501Y.V1 and non-501Y.V1 by comparing the timing of PCR-negative conversion along with the C_t value distribution of the PCR tests and culture tests during isolation. A cohort study was conducted from December 28, 2020 to March 15, 2021 on 178 patients who have been confirmed with 501Y.V1. R was used to conduct frequency analysis and cross-analysis(using the chi-square test) to compare epidemiological characteristics. A Kaplan Meier survival curve was constructed and the log-rank test was used to analyze the length of transmission period, and the C_t value distribution of the specimens during isolation was analyzed using a scatter plot.

1. Subjects of analysis

A. 501Y.V1 Group

Between December 28, 2020 and March 15, 2021, there were a total of 178 confirmed cases of 501Y.V1 in Korea. The C_t value of the PCR test during isolation could be confirmed for all patients. To exclude factors that could affect the length of transmission period, the following subjects were excluded from the study: 7 patients who were in severe/critical condition or died; 30 patients who did not complete the isolation treatment; and 63 patients who were discharged according to the clinical-based guidance for discharging patients. Hence, 501Y.V1 group consisted of a total of 78 patients, who were then further divided into symptomatic (54 patients) and asymptomatic (24 patients) groups prior to analysis.

B. Non-501Y.V1 Group

Two separate groups were formed for the non-501Y.V1

group according to the aim of the analysis. First, to compare the timing of PCR-negative conversion, the C_t value distribution of the PCR tests, and culture tests between the 501Y.V1 group and non-501Y.V1 group, the research subjects for the non-501Y.V1 group were chosen among patients confirmed to have COVID-19 prior to September 20, 2020—and specifically, those who were confirmed in May 2020 when the GH type virus, which is currently predominant in Korea, was detected. In total, there were 728 confirmed cases of COVID-19 in Korea between May 1, 2020 and May 31, 2020 (based on the date of confirmation). Among those confirmed cases, the following subjects were excluded: 211 patients who had missing values because the C_t values of the PCR tests were unconfirmed during isolation; 10 patients who were in severe/critical condition or died; and 196 patients who were discharged according to the clinical progress-based guidance on discharging patients. There were a total of 311 patients in the non-501Y.V1 group, which were further divided into symptomatic (201 patients) and asymptomatic (110 patients) groups to analyze the C_t distribution pattern of PCR tests and PCR-negative conversion during isolation.

Second, to compare differences in the timing of PCR-negative conversion according to the infection route, patients infected outbreaks at hospitals/nursing homes in April 2020, and those infected in May 2020, when regional group outbreaks were common, were considered as the non-501Y.V1 groups for comparisons. There were 886 patients who were confirmed with COVID-19 in Korea between April 1, 2020 and April 30, 2020 (based on the confirmation date). To eliminate factors that may affect transmission period, the following subjects were excluded: 27 patients who were in severe/critical condition or died, and 8 patients who were discharged according to the clinical progress-based guidance on discharging patients. Hence, the first non-501Y.V1 group (May 2020) was composed of 522 patients (including 211 patients whose C_t values of PCR tests during isolation were unconfirmed) and the second non-501Y.V1 group (April 2020) was composed of 851 patients. The timing of PCR-negative conversion was analyzed in both groups.

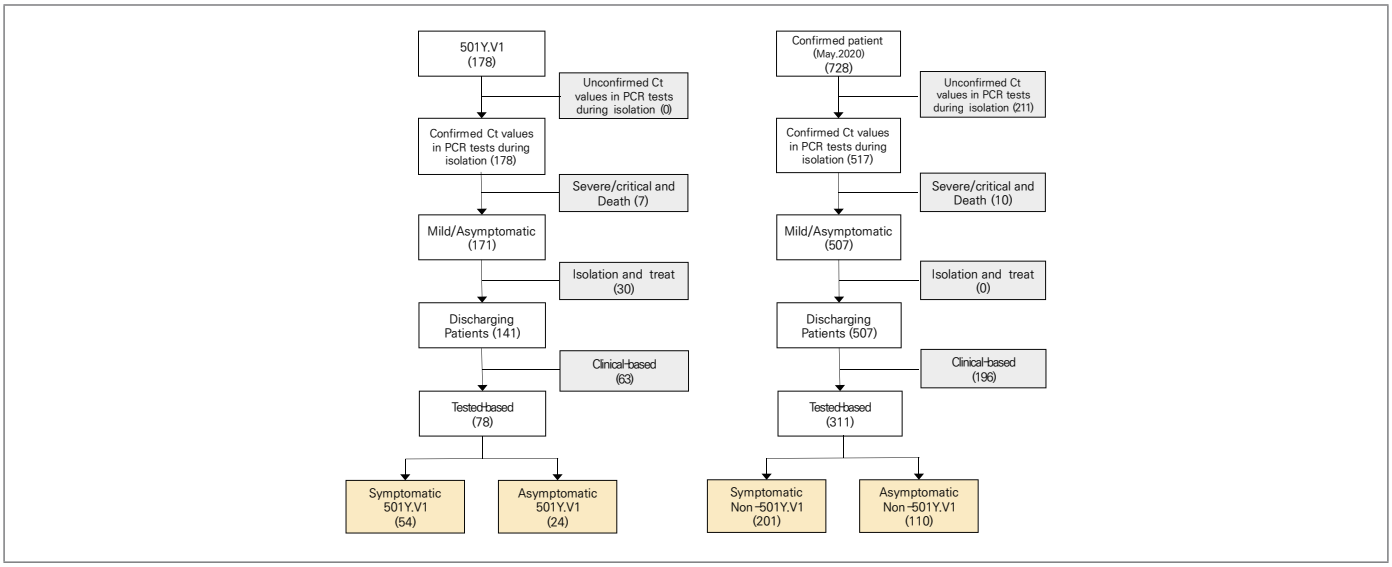


Figure 1. Classification of group for 501Y.V1 and non-501Y.V1

Table 1. Epidemiological characteristics of symptomatic 501Y.V1 and non-501Y.V1

Unit: n (%)

	Total	501Y.V1	Non-501Y.V1 (May, 2020)	*p*-value*
Total	255 (100.0%)	54 (100.0%)	201 (100.0%)	
Gender				
Male	179 (70.2%)	36 (66.7%)	143 (71.1%)	0.523
Female	76 (29.8%)	18 (33.3%)	58 (28.9%)	
Age group (yrs)				
0-9	7 (2.7%)	1 (1.9%)	6 (3.0%)	0.002
10-19	28 (11.0%)	1 (1.9%)	27 (13.4%)	
20-29	87 (34.1%)	13 (24.1%)	74 (36.8%)	
30-39	46 (18.0%)	9 (16.7%)	37 (18.4%)	
40-49	39 (15.3%)	17 (31.5%)	22 (10.9%)	
50-59	28 (11.0%)	8 (14.8%)	20 (10.0%)	
60-69	16 (6.3%)	3 (5.6%)	13 (6.5%)	
70-79	3 (1.2%)	1 (1.9%)	2 (1.0%)	
80+	1 (0.4%)	1 (1.9%)	0 (0.0%)	
Nationality				
Koreans	244 (95.7%)	46 (85.2%)	198 (98.5%)	0.000
Foreigners	11 (4.3%)	8 (14.8%)	3 (1.5%)	
Route of infection and detection				
Imported cases	74 (29.0%)	48 (88.9%)	26 (12.9%)	0.000
Imported cases realated	4 (1.6%)	4 (7.4%)	0 (0.0%)	
Nursing hospital/facilities related	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Religion related	136 (53.3%)	2 (3.7%)	134 (66.7%)	
Contact with confirmed cases	2 (0.8%)	0 (0.0%)	2 (1.0%)	
Under investigation (unclassified)	6 (2.4%)	0 (0.0%)	6 (3.0%)	

* χ^2 test

Table 2. Epidemiological characteristics of asymptomatic 501Y.V1 and non-501Y.V1

Unit: n (%)

	Total	501Y.V1	Non-501Y.V1 (May, 2020)	*p*-value*
Total	134 (100.0%)	24 (100.0%)	110 (100.0%)	
Gender				
Male	85 (63.4%)	14 (58.3%)	71 (64.5%)	0.566
Female	49 (36.6%)	10 (41.7%)	39 (35.5%)	
Age group (yrs)				
0-9	4 (3.0%)	2 (8.3%)	2 (1.8%)	0.089
10-19	13 (9.7%)	3 (12.5%)	10 (9.1%)	
20-29	39 (29.1%)	5 (20.8%)	34 (30.9%)	
30-39	26 (19.4%)	8 (33.3%)	18 (16.4%)	
40-49	18 (13.4%)	0 (0.0%)	18 (16.4%)	
50-59	18 (13.4%)	3 (12.5%)	15 (13.6%)	
60-69	11 (8.2%)	3 (12.5%)	8 (7.3%)	
70-79	5 (3.7%)	0 (0.0%)	5 (4.5%)	
80+	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Nationality				
Koreans	113 (84.3%)	11 (45.8%)	102 (92.7%)	0.000
Foreigners	21 (15.7%)	13 (54.2%)	8 (7.3%)	
Route of infection and detection				
Imported cases	57 (42.5%)	19 (79.2%)	38 (34.5%)	0.000
Imported cases realated	4 (3.0%)	3 (12.5%)	1 (0.9%)	
Nursing hospital/facilities related	2 (1.5%)	0 (0.0%)	2 (1.8%)	
Religion related	61 (45.5%)	2 (8.3%)	59 (53.6%)	
Contact with confirmed cases	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Under investigation (unclassified)	10 (7.5%)	0 (0.0%)	10 (9.1%)	

* χ^2 test

Table 3. Epidemiological characteristics of symptomatic 501Y.V1 and non-501Y.V1 (April, May 2020)

Unit: n (%)

	Total	501Y.V1	Non-501Y.V1 (April, 2020)	Non-501Y.V1 (May, 2020)
Total	**1,020 (100.0%)**	**54 (100.0%)**	**643 (100.0%)**	**323 (100.0%)**
Gender				
Male	533 (52.3%)	36 (66.7%)	285 (44.3%)	212 (65.6%)
Female	487 (47.7%)	18 (33.3%)	358 (55.7%)	111 (34.4%)
Age group (yrs)				
0-9	19 (1.9%)	1 (1.9%)	9 (1.4%)	9 (2.8%)
10-19	95 (9.3%)	1 (1.9%)	57 (8.9%)	37 (11.5%)
20-29	347 (34.0%)	13 (24.1%)	222 (34.5%)	112 (34.7%)
30-39	181 (17.7%)	9 (16.7%)	107 (16.6%)	65 (20.1%)
40-49	132 (12.9%)	17 (31.5%)	75 (11.7%)	40 (12.4%)
50-59	109 (10.7%)	8 (14.8%)	70 (10.9%)	31 (9.6%)
60-69	84 (8.2%)	3 (5.6%)	61 (9.5%)	20 (6.2%)
70-79	33 (3.2%)	1 (1.9%)	24 (3.7%)	8 (2.5%)
80+	20 (2.0%)	1 (1.9%)	18 (2.8%)	1 (0.3%)
Nationality				
Koreans	925 (90.7%)	46 (85.2%)	585 (91.0%)	294 (91.0%)
Foreigners	95 (9.3%)	8 (14.8%)	58 (9.0%)	29 (9.0%)
Route of infection and detection				
Imported cases	507 (49.7%)	48 (88.9%)	381 (59.3%)	78 (24.1%)
Imported cases realated	61 (6.0%)	4 (7.4%)	57 (8.9%)	0 (0.0%)
Nursing hospital/facilities related	100 (9.8%)	0 (0.0%)	100 (15.6%)	0 (0.0%)
Religion related	284 (27.8%)	2 (3.7%)	60 (9.3%)	222 (68.7%)
Contact with confirmed cases	31 (3.0%)	0 (0.0%)	27 (4.2%)	4 (1.2%)
Under investigation (unclassified)	37 (3.6%)	0 (0.0%)	18 (2.8%)	19 (5.9%)

Table 4. Epidemiological characteristics of asymptomatic 501Y.V1 and non-501Y.V1 (April, May 2020)

Unit: n (%)

	Total	501Y.V1	Non-501Y.V1 (April, 2020)	Non-501Y.V1 (May, 2020)
Total	**431 (100.0%)**	**24 (100.0%)**	**208 (100.0%)**	**199 (100.0%)**
Gender				
Male	192 (44.5%)	14 (58.3%)	107 (51.4%)	71 (35.7%)
Female	150 (34.8%)	10 (41.7%)	101 (48.6%)	39 (19.6%)
Age group (yrs)				
0-9	23 (5.3%)	2 (8.3%)	14 (6.7%)	7 (3.5%)
10-19	34 (7.9%)	3 (12.5%)	14 (6.7%)	17 (8.5%)
20-29	118 (27.4%)	5 (20.8%)	51 (24.5%)	62 (31.2%)
30-39	68 (15.8%)	8 (33.3%)	25 (12.0%)	35 (17.6%)
40-49	54 (12.5%)	0 (0.0%)	27 (13.0%)	27 (13.6%)
50-59	44 (10.2%)	3 (12.5%)	19 (9.1%)	22 (11.1%)
60-69	51 (11.8%)	3 (12.5%)	31 (14.9%)	17 (8.5%)
70-79	27 (6.3%)	0 (0.0%)	19 (9.1%)	8 (4.0%)
80+	12 (2.8%)	0 (0.0%)	8 (3.8%)	4 (2.0%)
Nationality				
Koreans	364 (84.5%)	11 (45.8%)	193 (92.8%)	160 (80.4%)
Foreigners	67 (15.5%)	13 (54.2%)	15 (7.2%)	39 (19.6%)
Route of infection and detection				
Imported cases	224 (52.0%)	19 (79.2%)	110 (52.9%)	95 (47.7%)
Imported cases realated	15 (3.5%)	3 (12.5%)	11 (5.3%)	1 (0.5%)
Nursing hospital/facilities related	71 (16.5%)	0 (0.0%)	69 (33.2%)	2 (1.0%)
Religion related	90 (20.9%)	2 (8.3%)	8 (3.8%)	80 (40.2%)
Contact with confirmed cases	5 (1.2%)	0 (0.0%)	3 (1.4%)	2 (1.0%)
Under investigation (unclassified)	26 (6.0%)	0 (0.0%)	7 (3.4%)	19 (9.5%)

Results

1. Distribution of C_t values

When comparing the C_t value distributions in the PCR tests during isolation between symptomatic and asymptomatic patients, no significant difference was found in the distribution of the 1,176 C_t values from the 255 symptomatic patients and the 559 C_t values from the 134 asymptomatic patients.

2. Comparison of the timing of PCR-negative conversion

The timing of PCR-negative conversion of patients infected with 501Y.V1 or non-501Y.V1 was compared between symptomatic and asymptomatic groups. In symptomatic patients, 501Y.V1 had a longer interval until PCR-negative conversion, with 31.5 days compared to the 29 days for non-501Y.V1 patients (p=0.026). However, there were no significant differences between the two groups in asymptomatic patients (p=0.33), with 501Y.V1 patients requiring 23 days and non-501Y.V1 patients requiring 21 days.

Furthermore, in order to evaluate the effect of the selection method for the non-501Y.V1 group, confirmed cases in April 2020 were also included in the analysis of the timing of PCR-negative

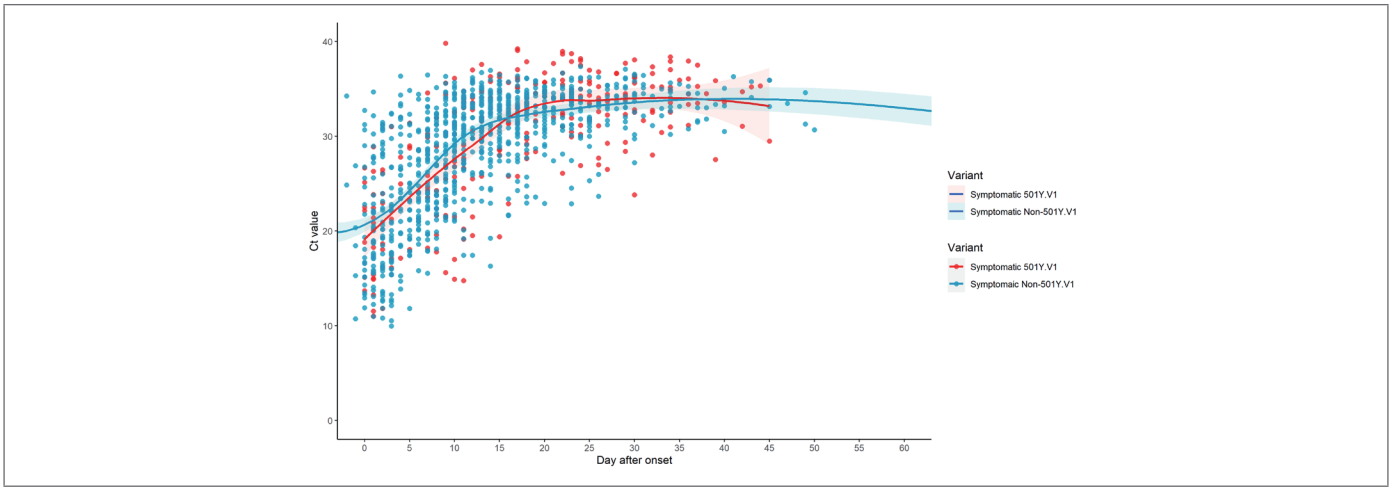


Figure 2. The distribution of C_t values between the 501Y.V1 and the Non-501Y.V1 (May, 2020)

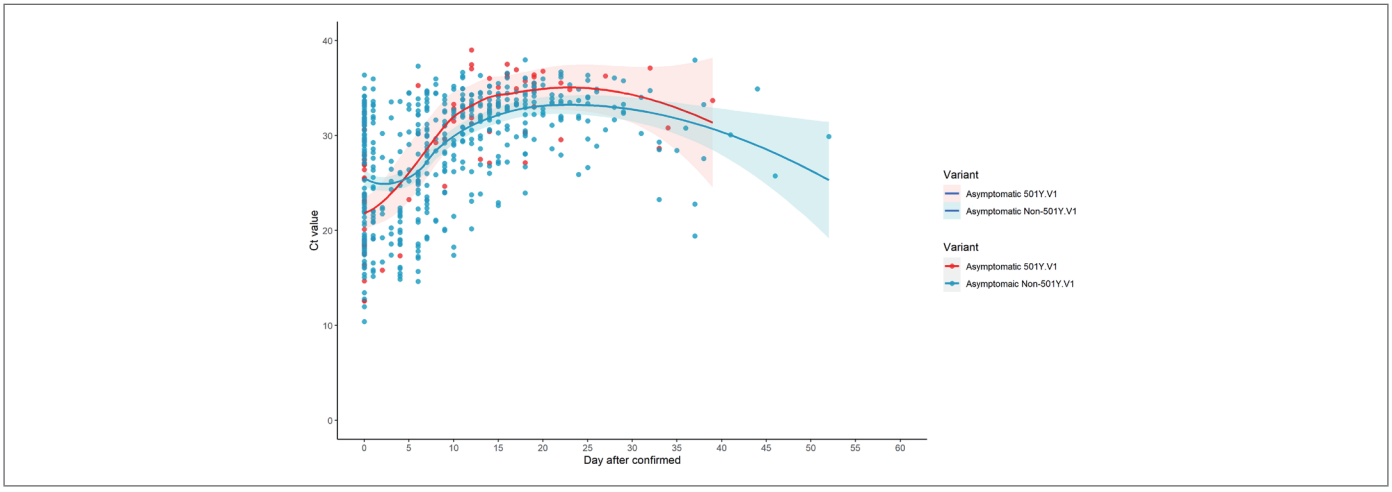


Figure 3. The distribution of C_t values between the 501Y.V1 and the Non-501Y.V1 (May, 2020)

conversion. The median interval until PCR-negative conversion was 30 days for the 501Y.V1 group, 33 days for the non-501Y.V1 group (April 2020), and 26 days for the other non-501Y.V1 group (May 2020). Because the infections in the April 2020 non-501Y.V1 group largely occurred in group outbreaks at hospital or nursing homes in old age groups and many of the patients, the age group of the patients was high and many of the patients were in the high-risk group with underlying diseases, explaining the long interval until PCR negative conversion. In contrast, the infections in the May 2020 non-501Y.V1 group largely occurred in regional group outbreaks; therefore, this group comprised relatively young patients, fewer of whom were at risk, and had the shortest interval until PCR-negative conversion. The differences in the timing of PCR-negative conversion appear to be more heavily affected by patient characteristics (such as underlying disease and age) and infection route, rather than the variant type.

A. Culture test results

Culture tests were conducted on 77 positive PCR samples from 33 patients infected with 501Y.V1. Of the tested samples, 31 cases within 9 days of confirmation or onset of symptoms that had C_t values lower than 26.73 demonstrated positive culture tests, while the remaining 46 samples were all negative.

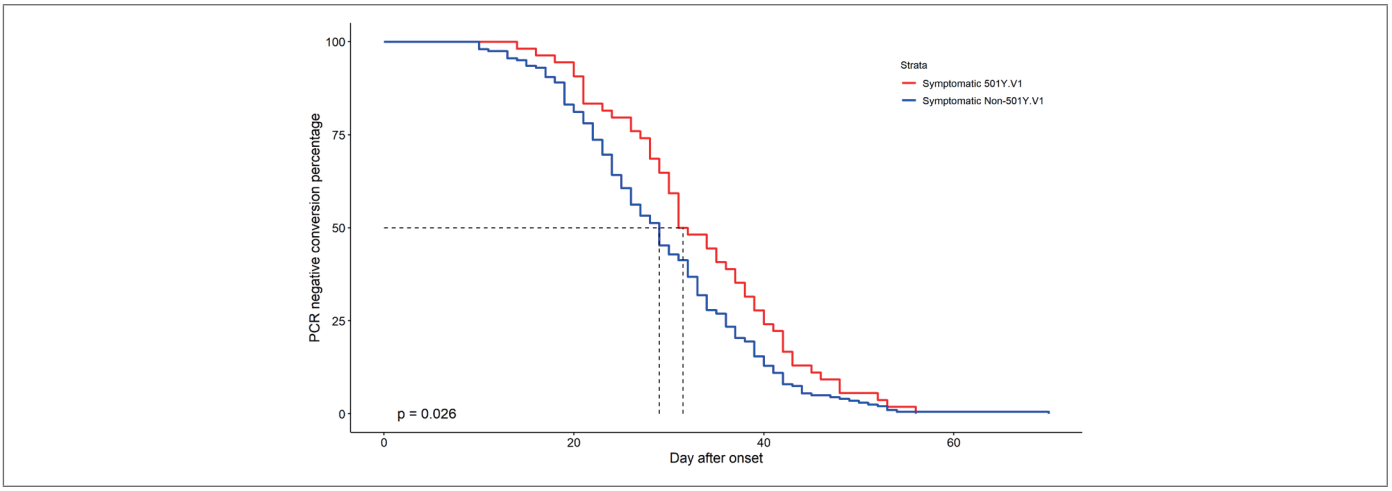


Figure 4. Survival curve between the symptomatic 501Y.V1 and the Non-501Y.V1 (May, 2020)

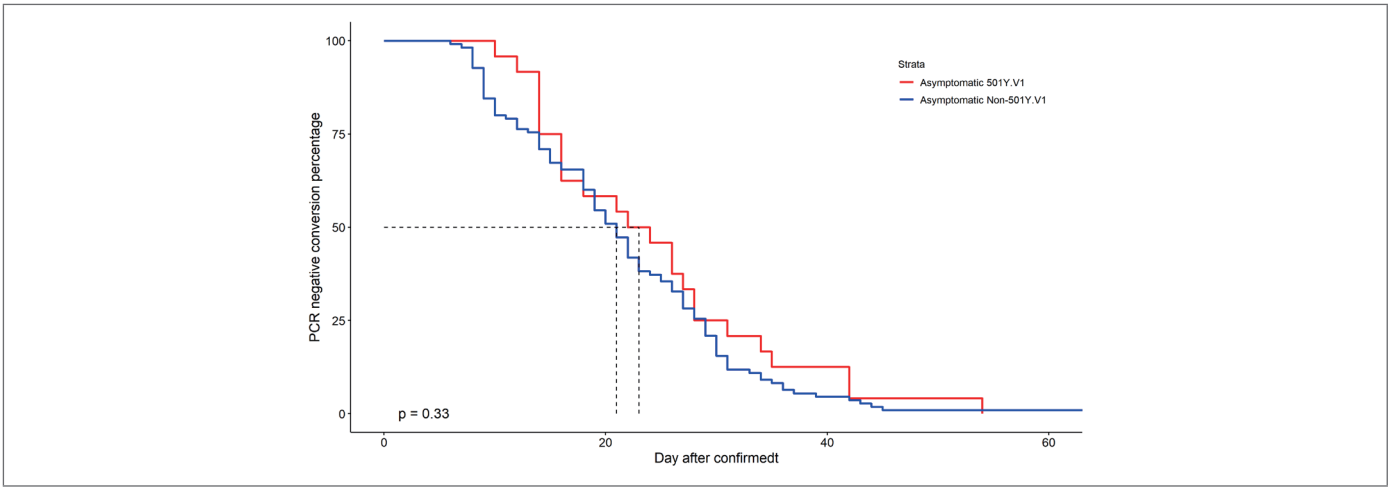


Figure 5. Survival curve between the asymptomatic 501Y.V1 and the Non-501Y.V1 (May, 2020)

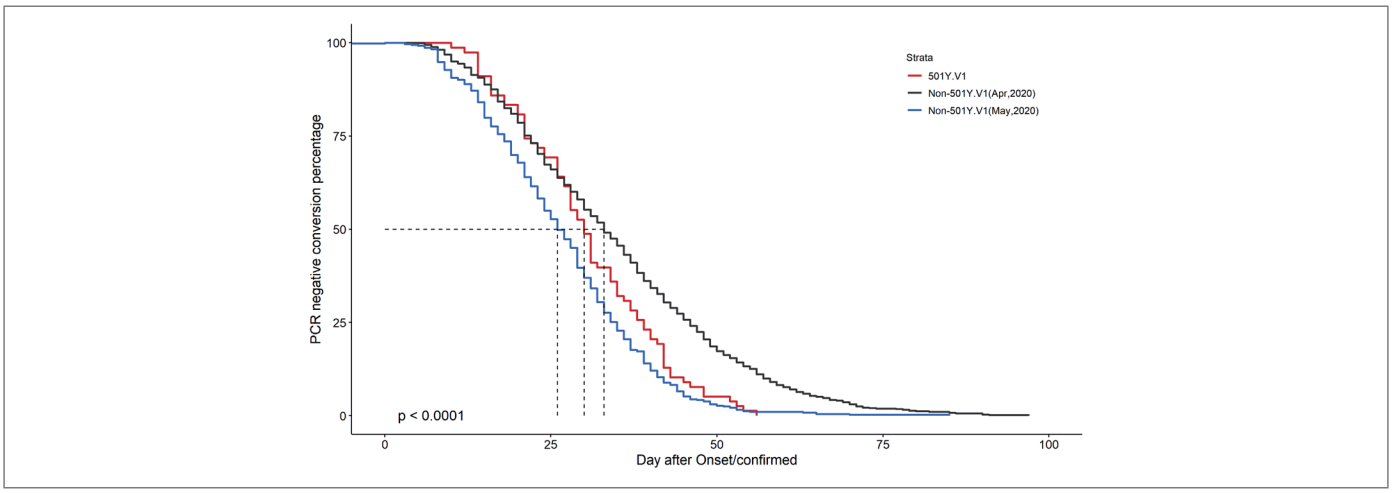


Figure 6. Survival curve between the 501Y.V1 and the Non-501Y.V1 (Apr, May)

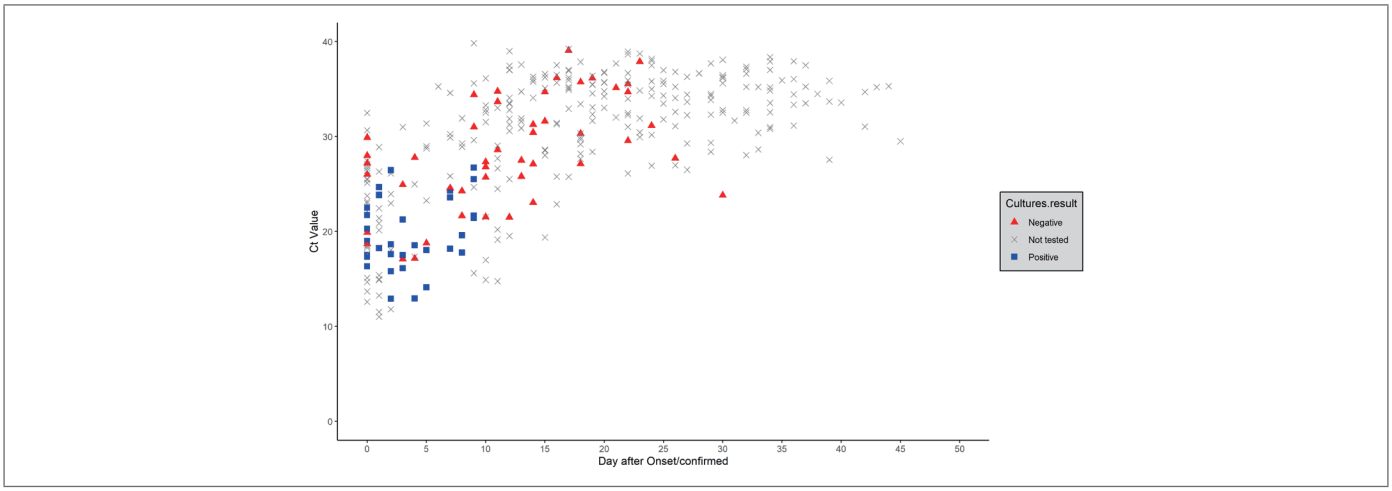


Figure 7. The distribution of C_t values and culture result between the 501Y.V1 (including clinical-based Guidance on discharging patients, Severe/critical)

* Positive 31 patients and negative 46 patients

Conclusion

After cases of pneumonia with an unknown cause were first announced in Wuhan, Hubei Province, China on December 31, 2019, the global COVID-19 pandemic has been continuing for over a year. Despite tremendous efforts, the pandemic still continues due to the emergence of variant viruses. 501Y.V1, for example, has demonstrated increased transmission rates (1.5 times) and fatality [1,2] and has caused another surge of cases in many nations. Hence, many nations around the world have taken drastic measures to prevent a resurgence of COVID-19 such as closing borders. In South Korea, enhanced case management guidelines have been applied to prevent all variants of the virus from entering the country.

As a preemptive measure, mandatory test-based guidance on discharging patients has been applied for patients with variants to manage the virus conservatively. However, this analysis confirmed that transmission period of 501Y.V1 has only a negligible difference compared to that of the existing SARS-CoV-2 virus, and therefore provides a meaningful basis for

clinical-based discharge guidelines regarding 501Y.V1 patients. There still is a need for continued research regarding VOCs. Hence, epidemiological and clinical information regarding patients infected with other variants, such as 501Y.V2, 501Y.V3, must be analyzed to establish patient management strategies for cases of COVID-19 variants in Korea.

Acknowledgments

Conflict of Interest

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

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① What was known?

After the first confirmed case in Korea in December 2020, 178 cases of 501Y.V1 have been confirmed as of March 15, 2021. Since January 2, 2021, the Central Disease Control Headquarters(CDCH) has applied the Enhanced Case Management Guidelines to confirmed and suspected cases of VOCs to prevent the inflow and further spread of variants in Korea.

② What does this study add?

The 501Y.V1 group and the non-501Y.V1 group (May 2020) both had similar distributions of C_t values from PCR tests. Culture tests showed positive results for 31 samples that were taken within 9 days of symptom onset in patients with a C_t value below 26.73, but they showed negative results for the remaining 46 samples. In addition, the 501Y.V1 group and the two non-501Y.V1 groups, which had different infection routes (April 2020, May 2020), had intervals of negative PCR conversion of 30 days, 33 days (April 2020), and 26 days (May 2020), respectively. Hence, it seems necessary to prioritize patient characteristics (such as underlying disease and age) resulting from the infection route over variant type when considering the timing of negative PCR conversion.

③ What are the implications?

By confirming that there were no significant differences in transmission period between the 501Y.V1 variant and the existing SARS-CoV-2 virus, this study provides the basis for the establishment of clinical-based discharge guidelines as a method of patient care. In the future, analysis of epidemiological and clinical information of patients infected with other variants, such as 501Y.V2, 501Y.V3, should be continued to establish scientific evidence-based patient management strategies for variant cases domestically.

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역학 · 관리보고서 1

성인 흡연자 패널 추적조사 실시 및 심층분석 결과

질병관리청 건강위해대응관 건강위해대응과 **최종윤, 나경인**
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초 록

흡연은 폐암, 식도암, 구강암 등 암, 심혈관질환, 호흡기질환, 백내장, 감염성 질환 등의 주요 원인이다. 이에 따라, 우리나라 성인 흡연자의 흡연행태를 파악하고 금연과 재흡연에 영향을 주는 결정요인 규명을 위해 국민건강영양조사를 활용하여 성인 총 1,018명에 대한 '성인 흡연자 패널조사'를 2015년부터 2020년까지 실시하였다. 또한, 최근 3개년도(4~6차) 추적조사 결과와 코로나19 팬데믹 상황에서 2개년도(5~6차) 추적조사 동안 참여자 흡연량 변화, 흡연 충동, 금연 광고 노출 빈도 등 요인별 특성을 심층분석 하였다. 본 심층분석을 통해 금연시도를 향상시키기 위한 흡연자의 스트레스 해소방안 마련 및 금연시도 없는 흡연자에 대한 금연지원 방안 마련의 필요성을 제시하였다. 특히, 코로나19상황 에서는 '금연을 전혀 시도하지 않음'의 비율이 39.4%에서 44.3%로 증가하였다. 향후, 흡연자 패널의 생체시료 기반 개인별 흡연 요인 분석을 통한 맞춤형 의학연구 적용 및 여성흡연자 패널을 충분히 확보한 추가연구 필요성을 제시하였다.

주요 검색어 : 흡연, 흡연자 패널, 흡연행태, 흡연설문, 코로나19

들어가는 말

성인 남성 중 흡연에 의한 사망자 수는 2012년 기준 4만 9천명으로 전체의 34.7%를 차지한다[1]. 흡연은 폐암, 식도암, 구강암 등 성인 남성 암의 41.1%, 심혈관질환의 33.4%의 주원인으로 조사되었으며, 호흡기질환, 백내장, 감염성 질환 등 건강 전반에 악영향을 미친다[2]. 흡연 폐해를 예방하고자 세계보건기구(World health organization, WHO)에서는 담배 소비 및 담배연기 노출을 줄이기 위한 담배규제기본협약(Framework Convention on Tobacco Control, FCTC)을 구성하였으며, FCTC 20조에서는 담배 소비의 규모와 패턴 파악의 필요성과 흡연 및 금연 결정요인 규명의 중요성을 강조하였다.

질병관리청은 우리나라 성인 흡연자의 흡연행태를 파악하고 금연과 재흡연에 영향을 주는 결정요인 규명을 위해 2015년부터 2020년까지 국민건강영양조사 기반의 성인 흡연자 패널을 구축하고 추적조사를 실시하였다. 본 원고에서는 지난 6년간 흡연자 패널 운영 결과 및 최근 3개년도(4~6차)와 최근 코로나19 영향의 2개년도(5~6차) 추적조사 참여자의 흡연행태 변화 및 심층분석 결과를 소개하고자 한다.

몸 말

1. 성인 흡연자 패널 운영 결과

가. 패널 구축 및 흡연 설문 개발

성인 흡연자 패널은 2015년부터 2019년까지 국민건강영양조사에 참여한 대상자 중 2020년까지 연중 1회 추적조사에

동의한 현재흡연자[1]와 과거흡연자[2]로 구축하였다. 2015년 164명으로 시작한 패널은 2019년까지 매해 신규 패널이 추가되어 2020년 1,018명으로 최종 구축되었고 남자 989명(97.2%), 여자 29명(2.8%)으로 구성되었으며, 여자는 참여 대상자 수가 적어 분석에서 제외되었다.

추적조사의 설문은 국내 건강 관련 조사[3]의 흡연 설문 문항 분석을 통해 흡연 행태변화에 영향을 주는 결정요인들을 포괄적으로 파악 후 전문가 자문회의를 거쳐 최종 문항을 확정하였다. 설문문항은 흡연행태와 결정요인으로 구분하였고, 결정요인은 개인 및 정책, 담배회사 영역으로 구분하여 구성하였다. 이후 추적조사마다 궐련형 전자담배, 담뱃갑 경고그림 도입, 코로나19 등 흡연 이슈를 반영한 신규문항을 추가하였다. 또한, 설문문항들은 향후 각종 흡연 조사 시 활용될 수 있도록 문항은행으로 구축하였다.

나. 패널 유지 및 관리

패널조사에서는 탈락을 최소화하여 추적률을 향상시키는 것이 매우 중요하다. 이에, 패널 유지·관리를 위해 2018년 4차 추적조사부터 SNS(카카오톡 플러스친구)를 활용하여 패널에게 금연정보를 주기적으로 제공하고 상담서비스를 실시하는 등 상호 소통적 관리를 진행하였다. 2019년 5차 추적조사부터는 실시간으로 패널 참여를 확인할 수 있도록 어플리케이션(명칭: 스모비)을 추가 도입하였다. 어플리케이션을 활용한 실시간 설문조사를 통해 패널 관리를 하였으며, 평균 56.1%, 최대 71.4%의 설문조사 응답률을 보였다.

다. 추적조사 수행

추적조사는 2015년 1차 추적조사를 시작으로 2020년까지 총 6회 실시되었으며, 2018년 3차 추적조사까지 전화 설문, 4차 추적조사부터는 모바일(웹 포함) 기반의 조사 방법을 추가 병행하여 설문조사를 실시하였다. 2015년 1차 추적조사에서는 164명의 패널 중 94명이 참여하여 57.3%의 추적률을 보였다. 전화와 모바일의 병행조사로 실시한 4차 추적조사에서는 3차 참여율인 39.2%보다 9.5% 증가한 48.7%의 참여율을 보였다. 이는 모바일 기반의 패널 관리, 모바일 조사 방법으로 인한 젊은 연령층의 참여 증가에 기인한 것으로 추측된다. 신규 유입 패널 없이 진행한 마지막 6차 추적조사에서는 패널 1,018명 중 427명이 참여하여 41.9%의 추적률을 나타냈다(표 1).

표 1. 연도별 기반조사와 추적조사 참여자 수 현황

단위 : 명

기반조사 참여연도	참여자 수											
	2015년(1차)		2016년(2차)		2017년(3차)		2018년(4차)		2019년(5차)		2020년(6차)	
	신규 패널 (n=164)	추적 조사 (n=94)	신규 패널 (n=249)	추적 조사 (n=245)	신규 패널 (n=309)	추적 조사 (n=283)	신규 패널 (n=258)	추적 조사 (n=477)	신규 패널 (n=38)	추적 조사 (n=346)	신규 패널 (n=0)	추적 조사 (n=427)
2015년	164	94	–	100	–	73	–	58	–	47	–	57
2016년			249	145	–	102	–	112	–	93	–	99
2017년					309	108	–	160	–	101	–	136
2018년							258	147	–	94	–	116
2019년									38	11	–	19
참여율*	57.3%		59.3%		39.2%		48.7%		34.0%		41.9%	

*추적조사 참여율=(당해년도 추적조사 참여자 수/누적 기반조사 참여자수)*100

1) 2015~2019년 국민건강영양조사 참여자 중 현재 담배를 피우고 있다고 응답한 사람
2) 2015~2019년 국민건강영양조사 참여자 중 최근 1년 이내 금연을 하고 있다고 응답한 사람
3) 국민건강영양조사, 지역사회건강조사, 청소년건강행태조사, 근로환경조사

2. 성인 흡연자 패널 추적조사 분석 결과

가. 추적조사 결과

2015년 1차 조사부터 2020년 6차 조사까지의 주요 결과를 살펴보면, 1차 조사에서 흡연자는 77.4%였으며, 2차 조사에서는 흡연자 분포가 81.2%로 가장 많았고, 이후 흡연자 비율이 감소하다 2020년 6차 조사에서 78.7%로 증가하는 추이를 보였다(그림 1). 금연을 시도하지 않는 이유에 대해 조사한 결과 '스트레스를 풀 방법이 마땅치 않아서'의 응답이 매해 가장 높았고 증가하는 추이를 보였다(그림 2).

흡연자 중 궐련형 전자담배를 사용하는 사람은 2017년 13.4%에서 2021년 20.1%로 6.7% 증가하였으며, 액상형 전자담배를 사용하는 사람은 2017년 17.2%에서 2020년 9.4%로 7.7% 감소하는 추이를 보였다(그림 3). 전자담배 사용 이유는 '금연하는데 도움이 될 것 같아서'의 응답이 2016년 48.6%였던데 반해 2020년 5.5%로 큰 폭으로 감소하였으며. 담배냄새가 나지 않아서 전자담배를 사용한다는 비율은 증가 추이를 보였다(그림 4).

담배 진열 노출과 그로 인한 흡연 욕구에 대해 조사한 결과 흡연자에서 평균 90%가 담배 진열을 목격한 경험이 있다고 응답하였으며, 목격한 사람 중 25%가 담배가 진열된 것을 보고 흡연 욕구가 생겼다고 응답하였다(그림 7).

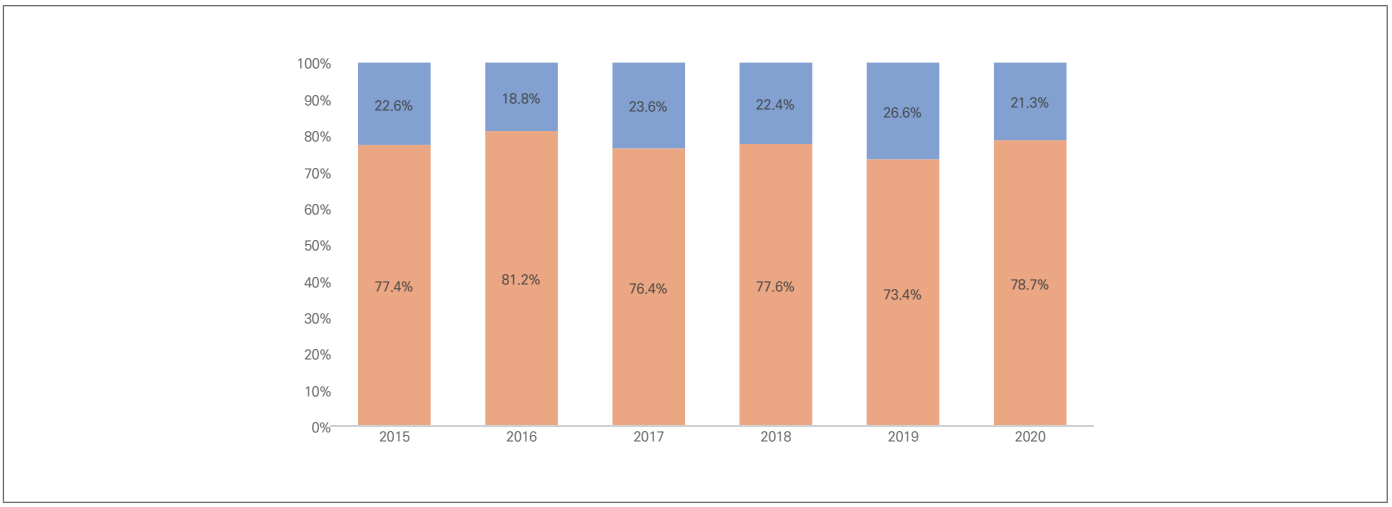


그림 1. 성인 흡연자 패널의 흡연자, 금연자 분포

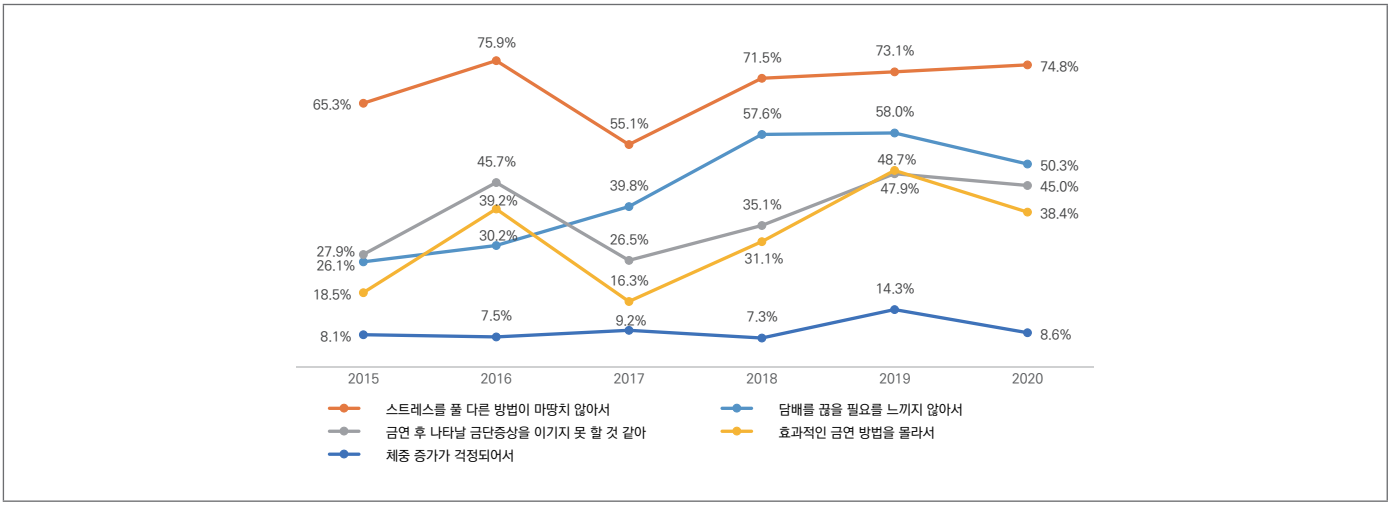


그림 2. 성인 흡연자 패널 흡연자 중 금연 미시도 이유

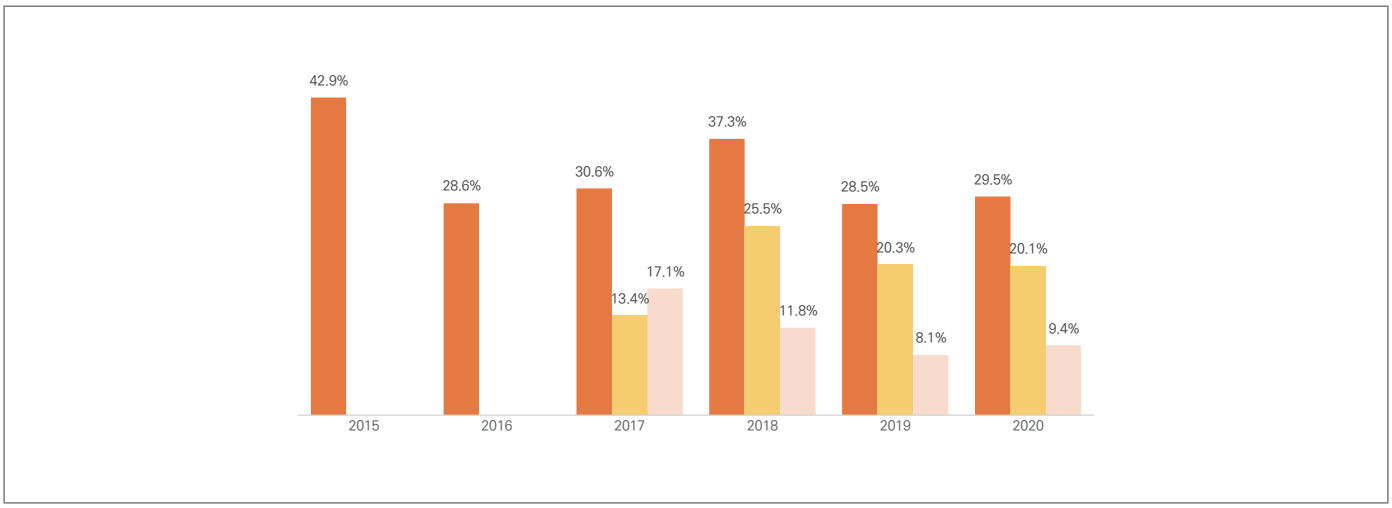


그림 3. 성인 흡연자 패널 흡연자 중 전자담배 사용률

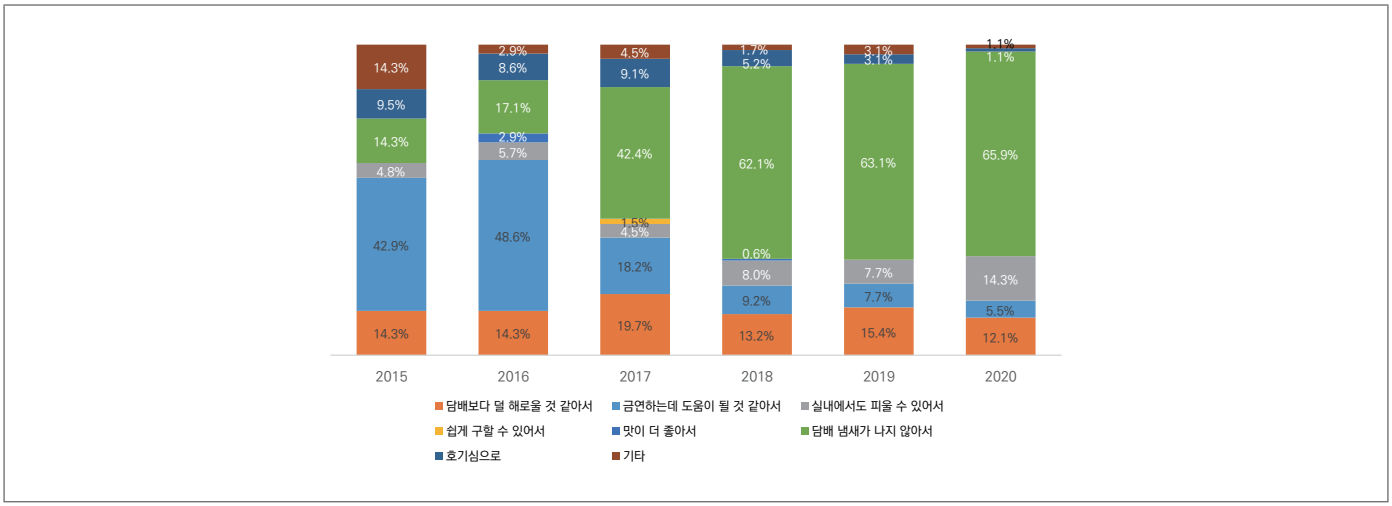


그림 4. 성인 흡연자 패널 흡연자 중 전자담배 사용자의 전자담배 사용 이유

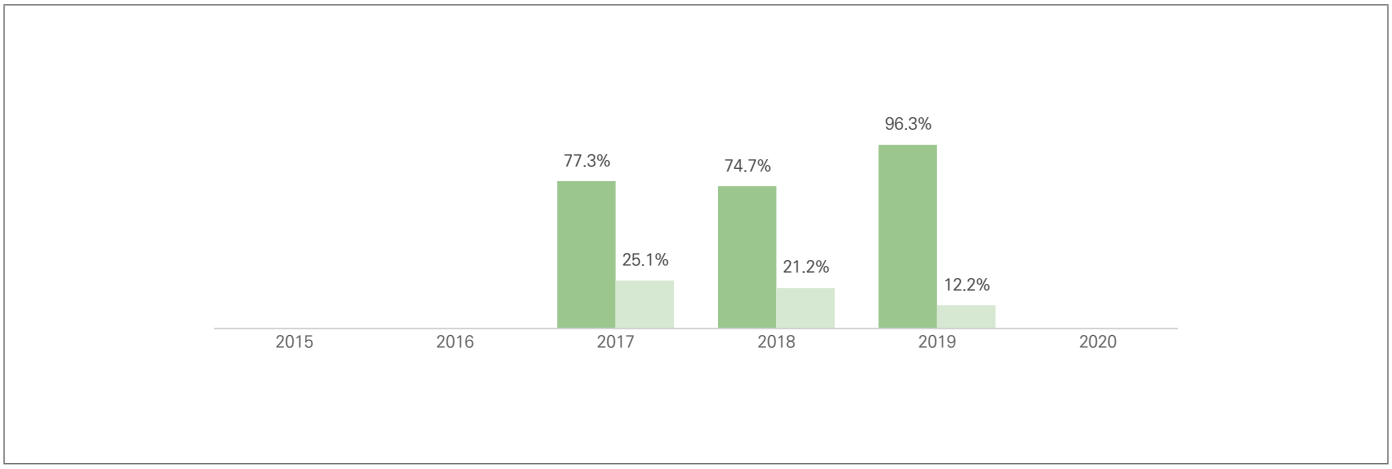


그림 5. 성인 흡연자 패널 흡연자 중 경고그림 인식 및 경고그림 효과

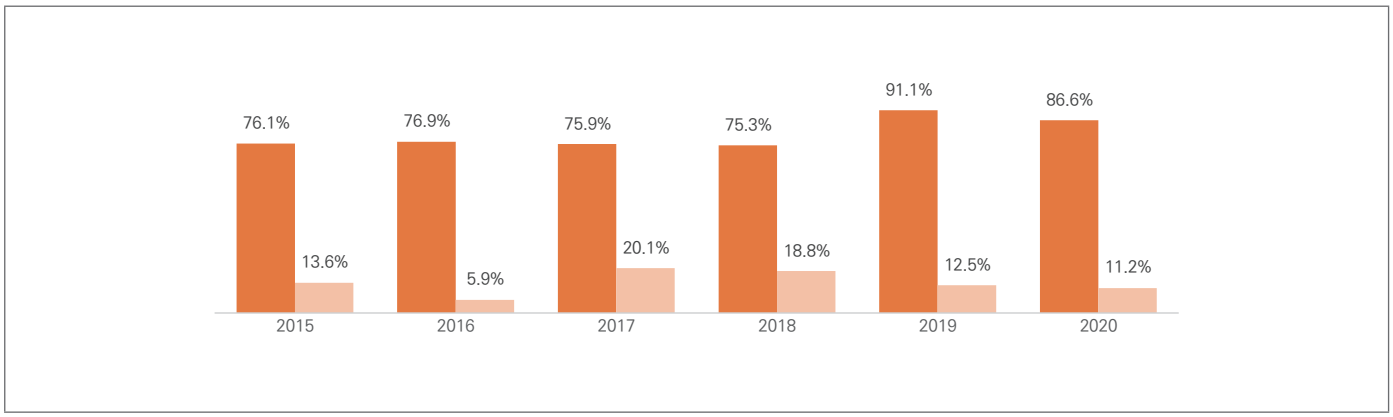


그림 6. 성인 흡연자 패널 흡연자 중 경고문구 인식 및 경고문구 효과

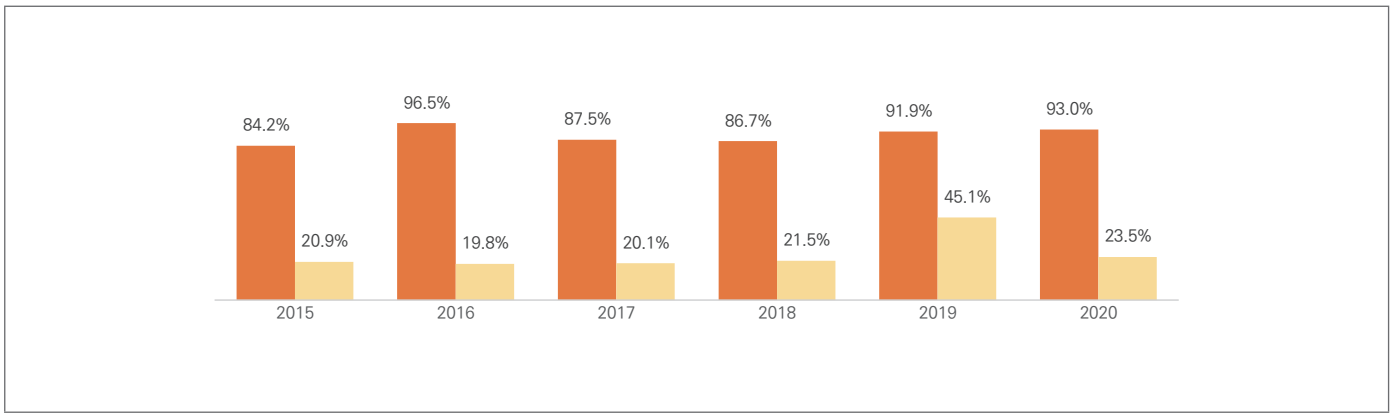


그림 7. 성인 흡연자 패널 흡연자 중 담배 진열 목격 및 흡연 욕구

나. 3개년도(4~6차) 추적조사 참여자의 흡연행태 변화

3개년도(4~6차) 추적조사 참여자는 203명으로 40대가 62명(31.6%)으로 가장 많았다. 흡연행태를 살펴보면, 참여자 중 155명(76.4%)은 현재 흡연을 하고 있었으며, 금연 중인 사람은 48명(23.6%)이었다. 금연 시도 유형에서는 금연을 시도하지 않은 사람이 92명(45.3%)으로 가장 많았다. 현재 흡연자 중 일반담배만 사용하는 사람이 105명(52.9%)으로 가장 많았으며, 궐련형 전자담배를 사용하는 사람이 23명(11.6%)으로 그 다음 순이었다(표 2).

4~6차 추적조사 참여자의 흡연행태 변화에 따른 영향요인을 분석하기 위해 흡연행태 변화를 4가지로 구분하여 요인별 특성 비교를 수행하였다(표 2, 3). 금연 시도 및 유지 행태변화에 따른 요인별 특성을 '흡연 유지 변화 없음'군과 비교한 결과, '흡연시도'군에서 향후 6개월간 금연 자신감이 있는 경우 유의하게 높은 비율을 보였다. '금연 시도'군에서는 사용담배가 일반담배인 경우 유의하게 높았으며, 65세 이상인 경우와 사용담배가 궐련형 전자담배인 경우는 유의하게 낮게 나타났다. 또한 '금연 유지 변화 없음'군에서 유의하게 높은 비율을 보인 요인은 금연광고 노출 빈도가 한 달에 한 번 이상 또는 한 달에 한 번 미만으로 적은 경우, 향후 6개월간 금연 자신감이 있는 경우였으며 반대로 유의하게 낮은 비율을 보인 요인은 코로나19로 인한 흡연량 변화, 흡연 충동이 있는 경우였다(표2, 3).

요인별 특성 비교에서 유의한 차이를 보였던 연령, 사용담배, 코로나19로 인한 흡연량 변화, 흡연 충동, 금연 광고 노출 빈도 등의 요인으로 금연 시도 및 유지 형태 변화 별 다범주 로지스틱 회귀분석을 수행하였다(표 4). 분석 결과 유의하게 나타난 요인은 없었으나, 금연을 한 번이라도 시도한 경우는 40~64세 연령층이 많았고, 동년배와 비교 시 건강 수준이 좋다고 평가한 경우는 많지 않은 것으로 나타났다.

표 2. 4차(2018년), 5차(2019년), 6차(2020년) 추적조사 참여자의 인구학적 특성

단위 : 명(%)

구분	빈도(백분율)
전체	203 (100.0)
연령	
19~29세	27 (13.3)
30~39세	55 (27.1)
40~49세	64 (31.6)
50~59세	27 (13.3)
60~69세	21 (10.3)
70대 이상	9 (4.4)
현재 흡연 상태	
흡연	155 (76.4)
금연	48 (23.6)
금연시도 유형별	
1군: 금연시도 없음	92 (45.3)
2군: 여러 번 금연시도 후 조사 당시 금연 실패	63 (31.0)
3군: 여러 번 금연시도 후 조사 당시 금연 유지	17 (8.4)
4군: 한 번에 금연 성공	31 (15.3)
금연시도, 유지 행태 변화 유형별	
흡연 유지 변화 없음	68 (33.5)
흡연시도	89 (43.9)
금연시도	24 (11.8)
금연 유지 변화 없음	22 (10.8)
사용 담배(흡연자 중)	
일반담배만	105 (52.9)
액상형 전자담배만	4 (2.0)
궐련형 전자담배만	23 (11.6)
일반담배와 액상형 전자담배 둘 다	11 (5.5)
일반담배와 궐련형 전자담배 둘 다	8 (4.0)
액상형 전자담배와 궐련형 전자담배 둘 다	1 (0.5)
일반담배, 액상형 전자담배, 궐련형 전자담배 모두 다	3 (1.5)
설문 유형	
온라인 설문	156 (76.8)
전화 설문	47 (23.2)

표 3. 금연시도, 유지 형태 변화별 특성 비교

구분	흡연 유지 변화 없음	흡연시도			금연시도			금연 유지 변화 없음		
	N (%)	N (%)	% diff*	95% CI	N (%)	% diff*	95% CI	N (%)	% diff*	95% CI
연령										
19~39세	29 (42.7)	37 (41.6)	1.1	−15.0, 16.7	10 (41.7)	1.0	−22.0, 23.9	6 (27.3)	15.4	−6.6, 37.4
40~64세	33 (48.5)	43 (48.3)	0.2	−16.0, 16.0	14 (58.3)	−9.8	−33.0, 13.2	11 (50.0)	−1.5	−26.0, 22.6
65세 이상	6 (8.8)	9 (10.1)	−1.3	−11.0, 7.9	0 (0.0)	8.8	2.1, 15.6	5 (22.7)	−14.0	−33.0, 4.9
사용 담배(현재, 과거 사용 담배)										
일반담배	47 (70.1)	59 (71.1)	−0.9	−16.0, 13.7	20 (90.8)	−21.0	−37.0, −4.5	17 (81.0)	−11.0	−31.0, 9.3
액상형 전자담배만, 일반담배와 액상형 전자담배	7 (10.5)	7 (8.4)	2.0	−7.4, 11.5	1 (4.6)	5.9	−5.5, 17.3	1 (4.8)	5.7	−6.0, 17.4
궐련형 전자담배만, 일반담배와 궐련형 전자담배	13 (19.4)	17 (20.5)	−1.1	−14.0, 11.8	1 (4.6)	14.9	2.0, 27.7	3 (14.2)	5.1	−13.0, 22.8
코로나19로 인한 흡연량 변화, 흡연 충동	54 (79.4)	66 (75.9)			18 (75.0)			21 (95.4)		
있음	14 (20.6)	21 (24.1)	−3.6	−16.7, 9.6	6 (25.0)	−4.4	−24.0, 15.4	1 (4.6)	16.0	3.1, 29.0
담배 진열 노출 경험	2 (3.0)	6 (6.9)			2 (8.3)			3 (13.6)		
있음	65 (97.0)	81 (93.1)	3.9	−2.8, 10.6	22 (91.7)	5.4	−6.4, 17.1	19 (86.4)	10.7	−4.3, 25.6
금연 광고 노출 빈도										
매일, 일주일에 한 번 이상	34 (50.7)	47 (54.0)			12 (52.2)			6 (27.3)		
한 달에 한 번 이상, 한 달에 한 번 미만	33 (49.3)	40 (46.0)	3.3	−12.6, 19.2	11 (47.8)	1.4	−22.0, 25.1	16 (72.7)	−24.0	−46.0, −1.4
향후 6개월 간 금연 자신감	45 (80.4)	45 (64.3)			10 (41.7)			1 (4.5)		
있음	11 (19.6)	25 (35.7)	−16.1	−31.4, −0.8	14 (58.3)	−39.0	−61.0, −16.0	21 (95.5)	−76.0	−89.0, −62.0
일상생활 스트레스	35 (52.2)	34 (38.2)			13 (54.2)			16 (72.7)		
있음	32 (47.8)	55 (61.8)	−14.0	−29.7, 1.6	11 (45.8)	1.9	−21.0, 25.2	6 (27.3)	20.5	−1.6, 42.6
PTEDS-평균										
1.6점 미만(이상 없음/정상)	35 (51.5)	44 (49.4)	2.0	−14.0, 17.8	12 (50.0)	1.5	−22.0, 24.7	14 (63.6)	−12.0	−36.0, 11.2
1.6-2.5점 미만(지속되는 울분)	21 (30.8)	37 (41.6)	−11.0	−26.0, 4.3	8 (33.3)	−2.5	−24.0, 19.4	7 (31.8)	−0.9	−23.0, 21.4
2.5점 이상(극심한/심한 울분)	12 (17.7)	8 (9.0)	8.7	−2.2, 19.5	4 (16.7)	1.0	−17.0, 18.4	1 (4.6)	13.1	0.5, 25.7
2주 이상 슬픔을 느낀 경험	50 (74.6)	73 (82.0)			18 (75.0)			20 (90.9)		
있음	17 (25.4)	16 (18.0)	7.4	−5.7, 20.5	6 (25.0)	0.4	−20.0, 20.6	2 (9.1)	16.3	0.4, 32.2
동년배와 비교 시 건강 수준										
좋다	16 (23.9)	16 (18.0)	5.9	−7.1, 18.9	5 (20.8)	3.1	−16.0, 22.2	8 (36.4)	−13.0	−35.0, 10.1
보통	39 (58.2)	62 (69.6)	−12.0	−27.0, 3.7	15 (62.5)	−4.3	−27.0, 18.4	9 (40.9)	17.3	−6.4, 41.0
나쁘다	12 (17.9)	11 (12.4)	5.6	−5.9, 17.0	4 (16.7)	1.2	−16.0, 18.8	5 (22.7)	−4.8	−25.0, 15.0

*% difference는 '흡연 유지 변화 없음'군과 차이

표 4. 금연 시도, 유지 형태 변화별 다범주 로지스틱 회귀분석

구분	흡연시도						금연시도						금연 유지 변화 없음					
	N (%)	Unadjusted			Adjusted		N (%)	Unadjusted			Adjusted		N (%)	Unadjusted			Adjusted	
		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI
연령(기준=19~39세)	37 (41.6)						10 (41.7)						6 (27.3)					
40~64세	43 (48.3)	1.0	0.5	2.0	1.2	0.6 2.5	14 (58.3)	1.2	0.5	3.2	1.5	0.5 4.5	11 (50.0)	1.6	0.5	4.9	2.6	0.7 9.6
65세 이상	9 (10.1)	1.2	0.4	3.7	1.8	0.5 6.6	0 (0.0)	–*			–*		5 (22.7)	4.0	0.9	17.6	3.0	0.6 16.4
사용 담배(현재, 과거 사용 담배)(기준=일반담배)	59 (71.1)						20 (90.8)						17 (81.0)					
액상형 전자담배만, 일반담배와 액상형 전자담배	7 (8.4)	0.8	0.3	2.4	0.9	0.3 3.1	1 (4.6)	0.3	0.0	2.9	0.3	0.0 3.0	1 (4.8)	0.4	0.0	3.5	0.6	0.1 6.5
궐련형 전자담배만, 일반담배와 궐련형 전자담배	17 (20.5)	1.0	0.5	2.4	1.2	0.5 2.9	1 (4.6)	0.2	0.0	1.5	0.2	0.0 1.5	3 (14.2)	0.6	0.2	2.5	0.7	0.2 3.2
코로나19로 인한 흡연량 변화, 흡연 충동	66 (75.9)						18 (75.0)						21 (95.4)					
있음	21 (24.1)	1.2	0.6	2.6	1.2	0.5 2.7	6 (25.0)	1.3	0.4	3.8	1.0	0.3 3.5	1 (4.6)	0.2	0.0	1.5	0.2	0.0 2.1
담배 진열 노출 경험	6 (6.9)						2 (8.3)						3 (13.6)					
있음	81 (93.1)	0.4	0.1	2.1	0.3	0.1 1.9	22 (91.7)	0.3	0.0	2.5	0.3	0.0 2.4	19 (86.4)	0.2	0.0	1.3	0.2	0.0 1.2
금연 광고 노출 빈도(기준=매일, 일주일에 한 번 이상)	47 (54.0)						12 (52.2)						6 (27.3)					
한 달에 한 번 이상, 한 달에 한 번 미만	40 (46.0)	0.9	0.5	1.7	0.8	0.4 1.5	11 (47.8)	0.9	0.4	2.4	0.8	0.3 2.1	16 (72.7)	2.7	1.0	7.9	3.2	1.0 10.1
일상생활 스트레스	34 (38.2)						13 (54.2)						16 (72.7)					
있음	55 (61.8)	1.8	0.9	3.4	2.0	1.0 4.2	11 (45.8)	0.9	0.4	2.4	1.0	0.4 2.9	6 (27.3)	0.4	0.1	1.2	0.6	0.2 2.1
동년배와 비교 시 건강 수준(기준=좋다)	16 (18.0)						5 (20.8)						8 (36.4)					
보통	62 (69.6)	1.6	0.7	3.5	1.5	0.6 3.6	15 (62.5)	1.2	0.4	4.0	1.3	0.3 4.7	9 (40.9)	0.5	0.2	1.4	0.5	0.1 1.8
나쁘다	11 (12.4)	0.9	0.3	2.7	0.7	0.2 2.2	4 (16.7)	1.1	0.2	4.8	1.4	0.3 7.7	5 (22.7)	0.8	0.2	3.2	0.9	0.2 4.4

*추정 신뢰구간의 상한이 무한대로 추정되어 해석 어려움.

다. 2개년도(5~6차) 추적조사 참여자의 코로나19로 인한 흡연행태 변화

코로나19로 인한 팬데믹 환경이 흡연행태에 어떠한 영향을 미치는지 파악하기 위하여 6차 추적조사에 관련 문항을 추가하였다. 결과 분석 시 회상편견(recall bias)이 있을 수 있는 점과 단면분석의 제한점을 고려하여 5, 6차 추적조사에 모두 참여한 패널 대상으로 코로나19로 인한 흡연행태 변화를 비교하였다.

5차와 6차 추적조사에 참여한 246명의 특성을 살펴보면 40대가 83명(33.7%)으로 가장 많았으며, 185명(75.2%)이 흡연자였다. 금연시도 유형별 분포로는 '금연시도 없음'군이 109명(44.3%)으로 가장 많았고, 흡연자의 125명(51.9%)이 일반담배만 사용하는 것으로 나타났다(표 5).

흡연행태 변화 비교를 위해 현재 흡연 상태, 금연 시도 유형, 흡연량 등을 비교하였으며, 흡연행태에 영향을 줄 수 있는 스트레스, 울분척도(Posttraumatic Embitterment Disorder Self-Rating Scale, PTEDS) 등의 요인을 분석하였다(표 6, 7). 분석 결과 현재 흡연 상태와 금연 행동단계 유형별 분포는 큰 차이가 없었다. 그러나 흡연자 중 금연을 전혀 시도하지 않은 군의 비율이 5차 35.4%에서

표 5. 5차(2019년), 6차(2020년) 추적조사 참여자의 인구학적 특성

단위 : 명(%)

구분	빈도(백분율)
전체	246 (100.0)
연령	
19~29세	32 (13.0)
30~39세	62 (25.2)
40~49세	83 (33.7)
50~59세	33 (13.4)
60~69세	27 (11.0)
70대 이상	9 (3.7)
현재 흡연 상태	
흡연	185 (75.2)
금연	61 (24.8)
금연시도 유형별	
1군: 금연시도 없음	109 (44.3)
2군: 여러 번 금연시도 후 조사 당시 금연 실패	76 (30.9)
3군: 여러 번 금연시도 후 조사 당시 금연 유지	23 (9.3)
4군: 한 번에 금연 성공	38 (15.5)
사용 담배	
일반담배만	125 (51.9)
액상형 전자담배만	5 (2.1)
궐련형 전자담배만	30 (12.5)
일반담배와 액상형 전자담배 둘 다	12 (5.0)
일반담배와 궐련형 전자담배 둘 다	9 (3.7)
액상형 전자담배와 궐련형 전자담배 둘 다	1 (0.4)
일반담배, 액상형 전자담배, 궐련형 전자담배 모두 다	3 (1.2)
설문 유형	
온라인 설문	182 (74.0)
전화 설문	64 (26.0)

6차 44.3%로 증가하였으며, 여러 번 금연시도 후 조사 당시 금연 실패한 군의 비율이 5차 39.4%에서 6차 30.9%로 감소한 것을 볼 수 있었다. 흡연량의 변화는 크게 나타나지 않았으나, 액상형 전자담배 사용자의 액상 한 병 평균 사용일 수가 11.9일에서 3.4일로 크게 감소하였으며, 궐련형 전자담배 사용자에서도 흡연량이 소폭 증가한 것을 볼 수 있었다(표 6, 7).

표 6. 5차(2019년), 6차(2020년) 추적조사 연속 응답자 흡연행태 비교(1)

구분	5차 추적조사 N (%)	6차 추적조사 N (%)	% difference	95% CI	
전체	246 (100.0)				
현재 흡연 상태					
흡연	184 (74.8)	185 (75.2)	−0.4	−8.1	7.3
금연	62 (25.2)	61 (24.8)			
금연 행동단계 유형별					
숙고 전 단계	63 (25.8)	48 (22.2)	3.6	−4.2	11.4
숙고 단계	69 (28.3)	69 (31.9)	−3.7	−12.1	4.7
준비 단계	50 (20.5)	38 (17.6)	2.9	−4.3	10.1
실행 및 유지 단계	62 (25.4)	61 (28.3)	−2.8	−11.0	5.3
금연 시도 유형별					
1군: 금연시도 없음	87 (35.4)	109 (44.3)	−8.9	−17.6	−0.3
2군: 여러 번 금연시도 후 조사 당시 금연 실패	97 (39.4)	76 (30.9)	8.5	0.1	16.9
3군: 여러 번 금연시도 후 조사 당시 금연 유지	21 (8.5)	23 (9.3)	−0.8	−5.9	4.2
4군: 한 번에 금연 성공	41 (16.7)	38 (15.5)	1.2	−5.3	7.7
사용 담배(현재 사용 담배)					
일반담배	126 (70.4)	125 (69.0)	1.3	−8.2	10.8
액상형 전자담배만, 일반담배와 액상형 전자담배	14 (7.8)	17 (9.4)	−1.6	−7.4	4.2
궐련형 전자담배만, 일반담배와 궐련형 전자담배	39 (21.8)	39 (21.6)	0.2	−8.3	8.8
하루(24시간) 이상 금연 여부					
있음	97 (52.7)	76 (48.7)	4.0	−6.7	14.7
최근 6개월 이상 금연 여부					
있음	5 (5.2)	28 (36.8)	−31.7	−43.4	−20.0
일상 생활 스트레스					
있음	115 (59.6)	107 (58.2)	6.1	−3.9	16.1
PTEDS-평균					
1.6점 미만(이상 없음/정상)	127 (51.6)	87 (47.0)	4.6	−4.9	14.1
1.6-2.5점 미만(지속되는 울분)	92 (37.4)	74 (40.0)	−2.6	−11.9	6.7
2.5점 이상(극심한/심한 울분)	27 (11.0)	24 (13.0)	−2.0	−8.2	4.2
2주 이상 슬픔을 느낀 경험					
있음	39 (15.9)	40 (21.7)	−5.9	−13.4	1.6
동년배와 비교 시 건강 수준					
좋다	53 (21.5)	38 (20.7)	0.9	−6.9	8.7
보통	151 (61.4)	116 (63.0)	−1.7	−10.9	7.6
나쁘다	42 (17.1)	30 (16.3)	0.8	−6.3	7.9

표 7. 5차(2019년), 6차(2020년) 추적조사 연속 응답자 흡연행태 비교(2)

구분	5차 추적조사 평균(표준편차)	6차 추적조사 평균(표준편차)	t	p-value
하루 평균 일반담배 흡연량(개비)	13.6 (6.8)	13.7 (6.1)	−0.20	0.842
사용 액상형 전자담배 한 병의 평균 사용일 수(일)	11.9 (10.2)	3.4 (2.4)	3.27	0.005
하루 평균 궐련형 전자담배 흡연량(개비)	12.2 (10.2)	14.9 (6.3)	−1.19	0.238

맺는 말

본 연구에서는 2015년부터 2020년까지 구축된 패널 1,018명을 대상으로 총 6번의 추적조사를 수행하여 금연정책 및 환경요인에 의한 흡연행태 변화를 주기적으로 모니터링 하였다. 최근 3개년도(4~6차) 참여자를 대상으로 분석한 결과에서는 흡연자에서 '금연 시도 없음 군'이 증가하는 것을 볼 수 있었다. 코로나19 팬데믹 환경에 의한 흡연행태 변화를 알 수 있는 2개년도(5~6차) 조사에서 흡연자 중 금연을 전혀 시도하지 않은 군의 비율이 5차 35.4%에서 6차 44.3%로 증가하였으며, 여러 번 금연 시도 후 실패한 군의 비율이 5차 39.4%에서 6차 30.9%로 감소하였다.

흡연자의 금연 시도를 위해 스트레스 해소방안과 이에 대응할 수 있는 능력 향상을 위한 정부의 개입이 필요하며, 금연 시도가 없는 흡연자에 대한 금연지원 방안을 마련해야 할 것이다. 담뱃갑 경고 그림 및 문구 등의 금연정책 효과평가를 시행하고, 담배 진열 및 광고에 대한 담배규제 정책 마련이 필요할 것이다. 또한 전자담배가 금연 효과가 없음을 보여주고 있어 전자담배 사용에 대한 금연정책이 보완되어야할 것이다.

향후 성인 흡연자 패널의 생체시료를 이용한 니코틴 수용체 분포 등 유전체 연구와 금연 약물 처방에 감수성 높은 흡연자를 구분할 수 있는 개인 맞춤형 의학 연구 방법을 적용한다면 금연과 재흡연에 영향을 주는 결정요인 규명을 명확히 할 수 있을 것이다. 또한 점차 증가하는 여성 흡연자 대상 국가금연정책 마련을 위해 여성 패널 수 증가 및 여성 흡연 원인 파악과 금연 유지를 위한 지원 마련이 필요하다.

① 이전에 알려진 내용은?

많은 흡연행태 관련 연구에서 스트레스 상황은 흡연행태와 관련성이 적은 것으로 알려져 있으나, 코로나19 팬데믹 상황을 반영한 본 연구에서는 흡연자가 금연을 시도하지 않고, 금연자가 금연을 실패하게 되는 가장 큰 이유로 스트레스 영향이 크게 작용하는 것을 볼 수 있었다.

② 새로이 알게 된 내용은?

본 연구를 통해 금연시도 유형 변화 양상은 '금연시도 없음'군과 '금연시도 후 금연 실패'군에서의 변화가 크고 반복되는 양상을 가지고 있으며, '한 번에 금연 성공'군이 금연에 실패하는 경우가 많았다. 금연시도는 하지만 금연에는 실패하는 군의 분포가 가장 많았고, 코로나19 팬데믹 상황에서 금연을 시도하지 않는 흡연자의 비율이 늘었음을 알 수 있었다.

③ 시사점은?

패널조사의 경우 지속적으로 신뢰도와 정확도가 확보된 응답을 얻어내기 위해 상당한 재원과 인프라가 소요되는 어려운 조사 방법임을 감안할 때 본 연구가 가지는 의미는 크다고 볼 수 있다. 이에 본 연구는 패널 유지율을 높이기 위해 SNS와 어플리케이션을 활용한 방법들을 시범 적용해 보았으며, 이를 통해 패널의 대표성을 확보하기 위해 탈락 패널들에 대한 특성을 파악하여 개인의 인구통계학적 특성 또는 흡연 관련 특성에 의한 것인지를 알 수 있었다. 이 검토 자료는 추후 패널조사 설계 및 수행 시 패널 관리 방법과 효과에 대한 참고자료로 활용될 수 있을 것으로 사료된다.

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Abstract

A panel study for smokers and its in-depth analysis

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Smoking adversely affects overall health, and is one of the leading causes of adult cancers, such as lung, esophageal, and oral cancer, and of cataracts and diseases such as cardiovascular, respiratory, and infectious diseases. Accordingly, to understand the smoking behavior of adult smokers in Korea and to identify the determinants that affect smoking cessation and re-smoking, an 'Adult Smokers Panel Survey' was conducted from 2015 to 2020 using the 'National Health and Nutrition Survey' of 1,018 adults in Korea. In addition, the characteristics of each factor, such as the change in smoking amount, smoking urge and the frequency of exposure to smoking cessation advertisements of participants, were analyzed during the follow-up surveys conducted over three years (2018-2020) and conducted for two years during the COVID-19 pandemic (2019, 2020). Through these in-depth surveys, the need to prepare a plan to relieve the stress of smokers to improve the induction of smoking cessation and to support a cessation plan for smokers who have not quit smoking was recommended. In particular, the percentage of 'No Attempt to Quit Smoking' increased from 39.4% to 44.3% during two years of the COVID-19 pandemic (2018-2020). In the future, the need for additional research with a panel of a sufficient number of female smokers and the application of customized medical research through the analysis of individual smoking factors based on biological samples of smokers was presented.

Keywords: Smoking, Smoker Panel, Smoking Behavior, Smoking Questionnaire, COVID-19

Table 1. The number of participants in the base survey and follow-up survey by year

Unit: number of participants

Year of participation in the base survey	Number of participants											
	2015 (1st)		2016 (2nd)		2017 (3rd)		2018 (4th)		2019 (5th)		2020 (6th)	
	New panel (n=164)	Follow-up (n=94)	New panel (n=249)	Follow-up (n=245)	New panel (n=309)	Follow-up (n=283)	New panel (n=258)	Follow-up (n=477)	New panel (n=38)	Follow-up (n=346)	New panel (n=0)	Follow-up (n=427)
2015	164	94	–	100	–	73	–	58	–	47	–	57
2016			249	145	–	102	–	112	–	93	–	99
2017					309	108	–	160	–	101	–	136
2018							258	147	–	94	–	116
2019									38	11	–	19
Participation rate*	57.3%		59.3%		39.2%		48.7%		34.0%		41.9%	

*A follow-up survey participation rate = (the number of follow-up survey participants in the year / the number of cumulated base survey participants) * 100

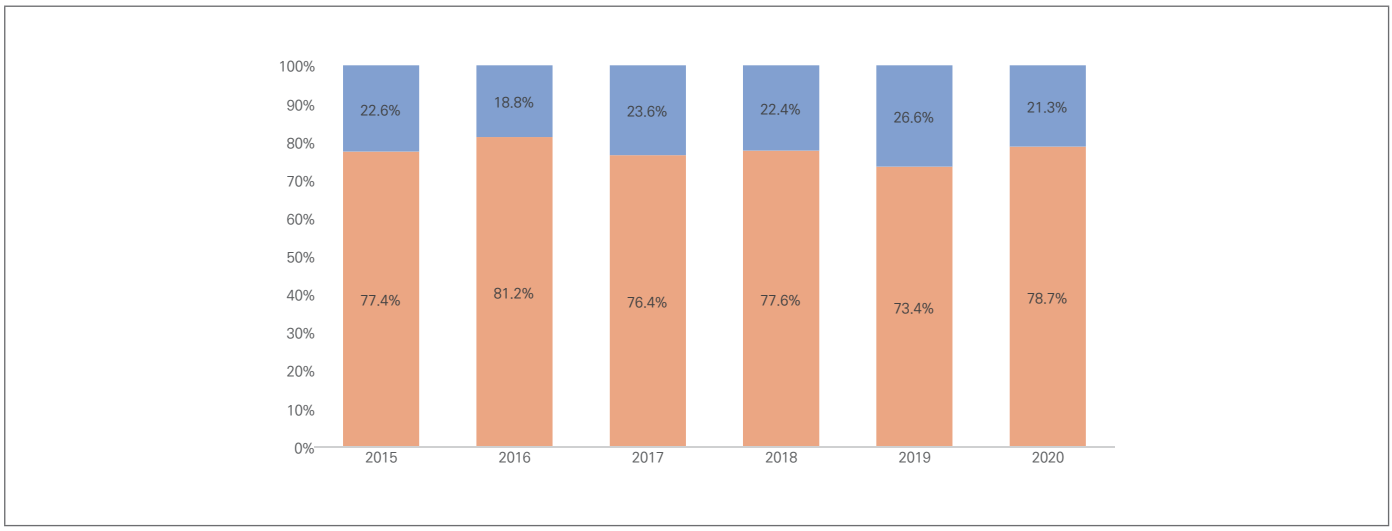


Figure 1. Distribution of smokers and non-smokers as reported in the adult smoker panel

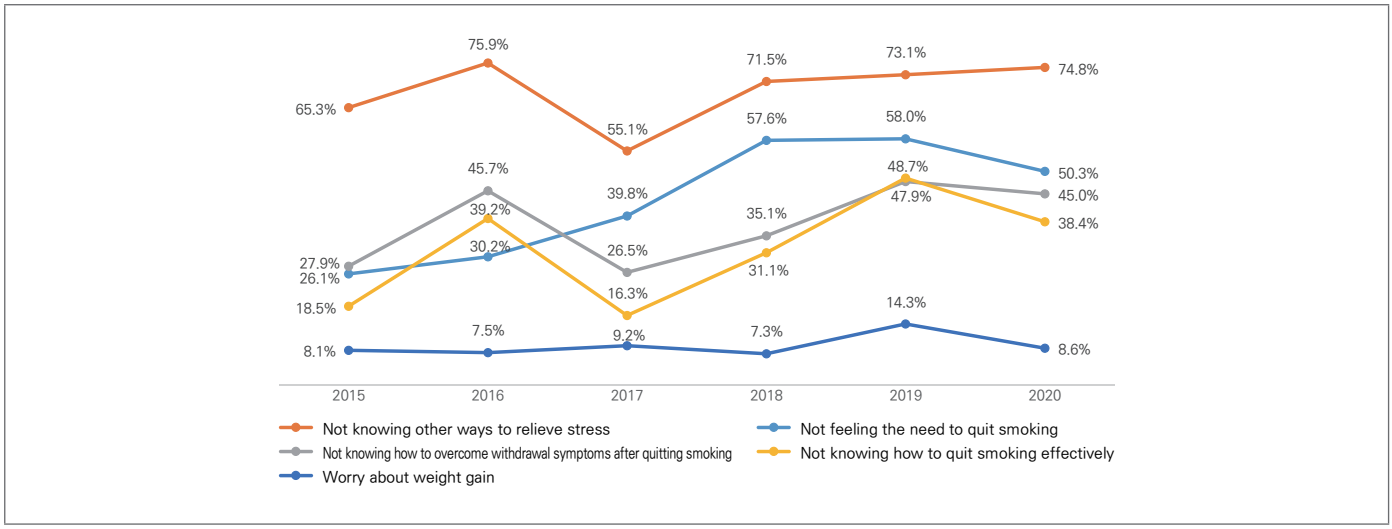


Figure 2. Reasons for not attempting to quit smoking as reported in the adult smoker panel

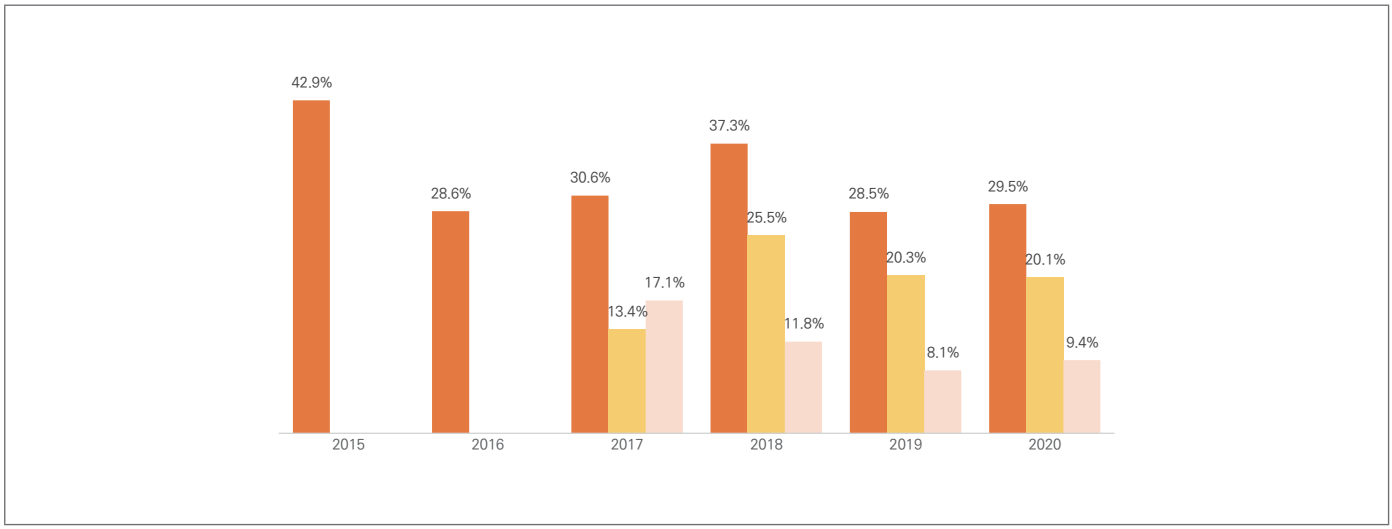


Figure 3. E-cigarette use rates as reported the adult smoker panel

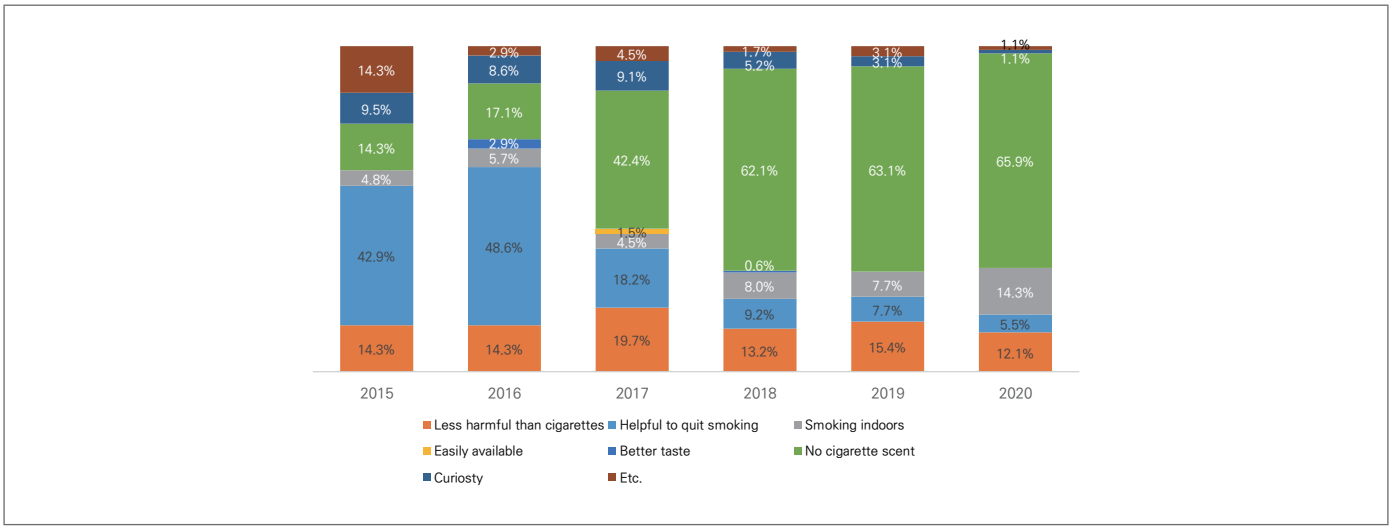


Figure 4. Reasons for using e-cigarettes by e-cigarette users as reported in the adult smoker panel

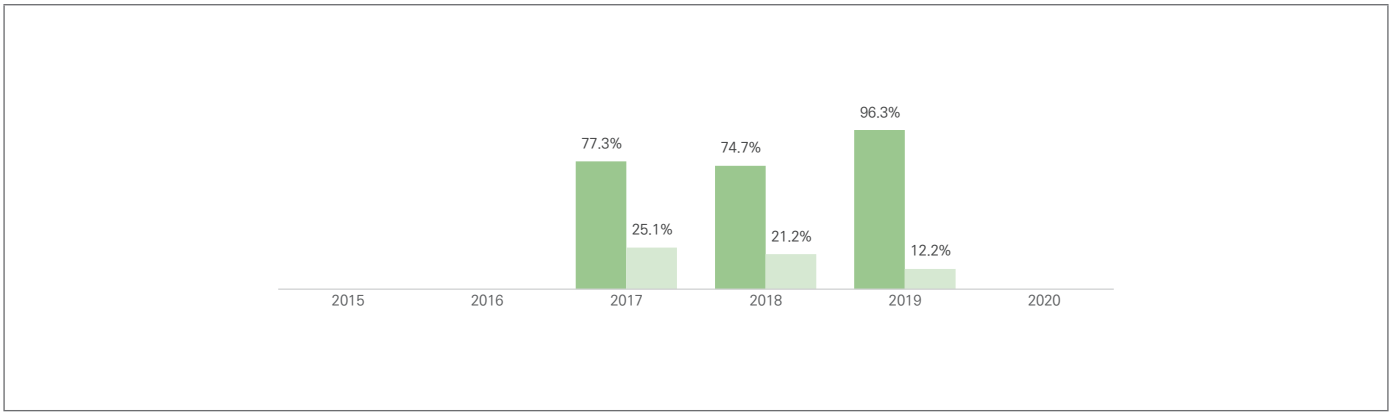


Figure 5. Warning picture recognition and the effect as reported in the adult smoker panel

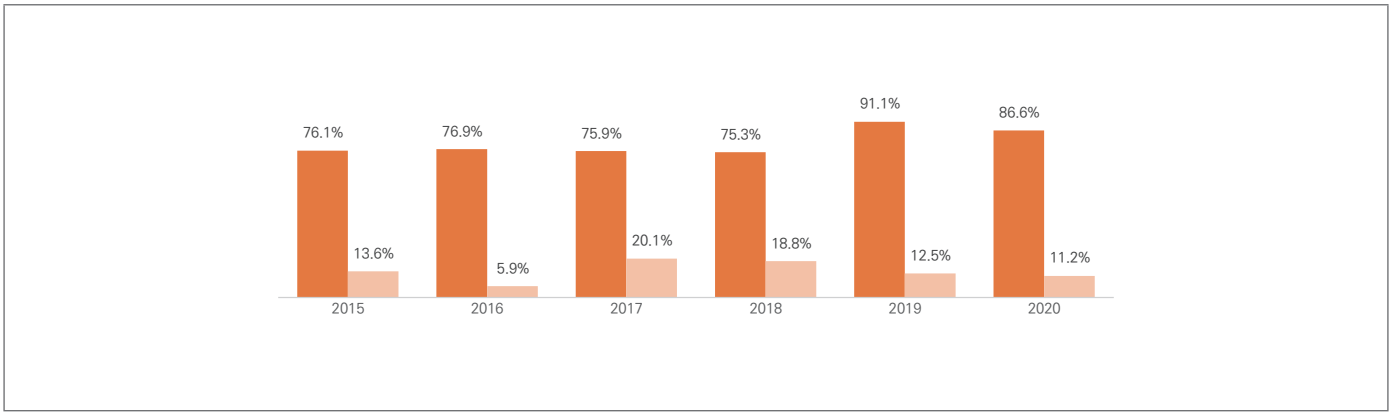


Figure 6. Warning statements recognition and the effect as reported in the adult smoker panel

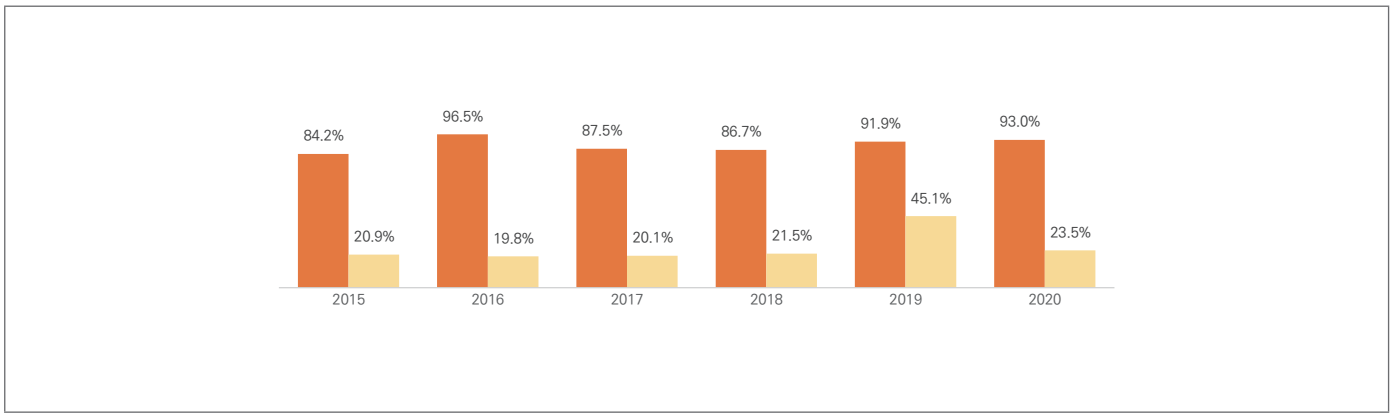


Figure 7. Tobacco display and smoking desire as reported in the adult smoker panel

Table 2. Demographic characteristics of 4th (2018), 5th (2019), and 6th (2020) follow-up participants as reported in the adult smoker panel

Unit: number of participants (%)

Type	Frequency (percentage)
Total	203 (100.0)
Age	
19-29	27 (13.3)
30-39	55 (27.1)
40-49	64 (31.6)
50-59	27 (13.3)
60-69	21 (10.3)
70 or older	9 (4.4)
Current smoking status	
Smoking	155 (76.4)
Non-smoking	48 (23.6)
Type of attempt to quit smoking	
Group 1: no attempt to quit smoking	92 (45.3)
Group 2: failure to quit smoking at the time of investigation after multiple attempts	63 (31.0)
Group 3: maintain smoking cessation at the time of investigation after multiple attempts	17 (8.4)
Group 4: attempt to quit smoking successful	31 (15.3)
Type of behavior change in smoking	
No change in smoking	68 (33.5)
Attempt to smoke	89 (43.9)
Attempt to quit smoking	24 (11.8)
No change in non-smoking	22 (10.8)
Type of cigarette product use (among smokers)	
Tobacco only	105 (52.9)
(Liquid-type) e-cigarette only	4 (2.0)
Heated tobacco only	23 (11.6)
Both tobacco and e-cigarette	11 (5.5)
Both tobacco and heated tobacco	8 (4.0)
Both e-cigarette and heated tobacco	1 (0.5)
All type of cigarettes	3 (1.5)
Type of survey	
Online survey	156 (76.8)
Telephone survey	47 (23.2)

Table 3. Comparison of characteristics by change in attempts to quit smoking and maintenance

Type	No change in smoking	Attempt to smoke			Attempt to quit smoking			No change in non-smoking		
	N (%)	N (%)	%diff*	95% CI	N (%)	% diff*	95% CI	N (%)	% diff*	95% CI
Age										
19–39	29 (42.7)	37 (41.6)	1.1	−15.0, 16.7	10 (41.7)	1.0	−22.0, 23.9	6 (27.3)	15.4	−6.6, 37.4
40–64	33 (48.5)	43 (48.3)	0.2	−16.0, 16.0	14 (58.3)	−9.8	−33.0, 13.2	11 (50.0)	−1.5	−26.0, 22.6
65 or older	6 (8.8)	9 (10.1)	−1.3	−11.0, 7.9	0 (0.0)	8.8	2.1, 15.6	5 (22.7)	−14.0	−33.0, 4.9
Type of cigarette product use (current, past)										
Tobacco	47 (70.1)	59 (71.1)	−0.9	−16.0, 13.7	20 (90.8)	−21.0	−37.0, −4.5	17 (81.0)	−11.0	−31.0, 9.3
Current: e-cigarette only, past: both tobacco and e-cigarette	7 (10.5)	7 (8.4)	2.0	−7.4, 11.5	1 (4.6)	5.9	−5.5, 17.3	1 (4.8)	5.7	−6.0, 17.4
Current: heated tobacco only, past: Both tobacco and heated tobacco	13 (19.4)	17 (20.5)	−1.1	−14.0, 11.8	1 (4.6)	14.9	2.0, 27.7	3 (14.2)	5.1	−13.0, 22.8
Change in smoking amount and urges due to COVID-19	54 (79.4)	66 (75.9)			18 (75.0)			21 (95.4)		
Yes	14 (20.6)	21 (24.1)	−3.6	−16.7, 9.6	6 (25.0)	−4.4	−24.0, 15.4	1 (4.6)	16.0	3.1, 29.0
Experience of cigarette display exposure	2 (3.0)	6 (6.9)			2 (8.3)			3 (13.6)		
Yes	65 (97.0)	81 (93.1)	3.9	−2.8, 10.6	22 (91.7)	5.4	−6.4, 17.1	19 (86.4)	10.7	−4.3, 25.6
Frequency of exposure to smoking cessation advertisements										
Everyday, more than once a week	34 (50.7)	47 (54.0)			12 (52.2)			6 (27.3)		
More than once a month, less than once a month	33 (49.3)	40 (46.0)	3.3	−12.6, 19.2	11 (47.8)	1.4	−22.0, 25.1	16 (72.7)	−24.0	−46.0, −1.4
Confidence to quit smoking for the next 6 months	45 (80.4)	45 (64.3)			10 (41.7)			1 (4.5)		
Yes	11 (19.6)	25 (35.7)	−16.1	−31.4, −0.8	14 (58.3)	−39.0	−61.0, −16.0	21 (95.5)	−76.0	−89.0, −62.0
Daily life stress	35 (52.2)	34 (38.2)			13 (54.2)			16 (72.7)		
Yes	32 (47.8)	55 (61.8)	−14.0	−29.7, 1.6	11 (45.8)	1.9	−21.0, 25.2	6 (27.3)	20.5	−1.6, 42.6
PTEDS-Average										
Less than 1.6 (no abnormality/normal)	35 (51.5)	44 (49.4)	2.0	−14.0, 17.8	12 (50.0)	1.5	−22.0, 24.7	14 (63.6)	−12.0	−36.0, 11.2
1.6 point – less than 2.5 point (lasting resentment)	21 (30.8)	37 (41.6)	−11.0	−26.0, 4.3	8 (33.3)	−2.5	−24.0, 19.4	7 (31.8)	−0.9	−23.0, 21.4
Over 2.5 point (extremely/very Resentment)	12 (17.7)	8 (9.0)	8.7	−2.2 , 19.5	4 (16.7)	1.0	−17.0, 18.4	1 (4.6)	13.1	0.5, 25.7
Experience of feeling sad for more than two weeks	50 (74.6)	73 (82.0)			18 (75.0)			20 (90.9)		
Yes	17 (25.4)	16 (18.0)	7.4	−5.7 20.5	6 (25.0)	0.4	−20.0 20.6	2 (9.1)	16.3	0.4 32.2
Health level compared to peers of the same age										
Good	16 (23.9)	16 (18.0)	5.9	−7.1 18.9	5 (20.8)	3.1	−16.0 22.2	8 (36.4)	−13.0	−35.0 10.1
Normal	39 (58.2)	62 (69.6)	−12.0	−27.0 3.7	15 (62.5)	−4.3	−27.0 18.4	9 (40.9)	17.3	−6.4 41.0
Bad	12 (17.9)	11 (12.4)	5.6	−5.9 17.0	4 (16.7)	1.2	−16.0 18.8	5 (22.7)	−4.8	−25.0 15.0

*% difference means the difference from the group of 'No change in smoking'.

Table 4. Multi-category logistic regression analysis by change of attempted smoking cessation and maintenance pattern

Type	Attempt to smoke						Attempt to quit smoking						No change in non-smoking					
	N (%)	Unadjusted			Adjusted		N (%)	Unadjusted			Adjusted		N (%)	Unadjusted			Adjusted	
		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI
Age (ref=19-39)	37 (41.6)						10 (41.7)						6 (27.3)					
40-64	43 (48.3)	1.0	0.5	2.0	1.2	0.6	2.5	14 (58.3)	1.2	0.5	3.2	1.5	0.5	4.5	11 (50.0)	1.6	0.5	4.9	2.6	0.7	9.6
65 or older	9 (10.1)	1.2	0.4	3.7	1.8	0.5	6.6	0 (0.0)	-*			-*			5 (22.7)	4.0	0.9	17.6	3.0	0.6	16.4
Cigarette product use (current, past used cigarette) (ref=tobacco)	59 (71.1)						20 (90.8)						17 (81.0)					
Current: e-cigarette only, past: both tobacco and e-cigarette	7 (8.4)	0.8	0.3	2.4	0.9	0.3	3.1	1 (4.6)	0.3	0.0	2.9	0.3	0.0	3.0	1 (4.8)	0.4	0.0	3.5	0.6	0.1	6.5
Current: heated tobacco only, past: Both tobacco and heated tobacco	17 (20.5)	1.0	0.5	2.4	1.2	0.5	2.9	1 (4.6)	0.2	0.0	1.5	0.2	0.0	1.5	3 (14.2)	0.6	0.2	2.5	0.7	0.2	3.2
Change in smoking amount and urges due to COVID-19	66 (75.9)						18 (75.0)						21 (95.4)					
Yes	21 (24.1)	1.2	0.6	2.6	1.2	0.5	2.7	6 (25.0)	1.3	0.4	3.8	1.0	0.3	3.5	1 (4.6)	0.2	0.0	1.5	0.2	0.0	2.1
Experience of cigarette display exposure	6 (6.9)						2 (8.3)						3 (13.6)					
Yes	81 (93.1)	0.4	0.1	2.1	0.3	0.1	1.9	22 (91.7)	0.3	0.0	2.5	0.3	0.0	2.4	19 (86.4)	0.2	0.0	1.3	0.2	0.0	1.2
Frequency of exposure to smoking cessation advertisements (ref=everyday, more than once a week)	47 (54.0)						12 (52.2)						6 (27.3)					
More than once a month, less than once a month	40 (46.0)	0.9	0.5	1.7	0.8	0.4	1.5	11 (47.8)	0.9	0.4	2.4	0.8	0.3	2.1	16 (72.7)	2.7	1.0	7.9	3.2	1.0	10.1
Daily life stress	34 (38.2)						13 (54.2)						16 (72.7)					
Yes	55 (61.8)	1.8	0.9	3.4	2.0	1.0	4.2	11 (45.8)	0.9	0.4	2.4	1.0	0.4	2.9	6 (27.3)	0.4	0.1	1.2	0.6	0.2	2.1
Health level compared to peers of the same age (ref=good)	16 (18.0)						5 (20.8)						8 (36.4)					
Normal	62 (69.6)	1.6	0.7	3.5	1.5	0.6	3.6	15 (62.5)	1.2	0.4	4.0	1.3	0.3	4.7	9 (40.9)	0.5	0.2	1.4	0.5	0.1	1.8
Bad	11 (12.4)	0.9	0.3	2.7	0.7	0.2	2.2	4 (16.7)	1.1	0.2	4.8	1.4	0.3	7.7	5 (22.7)	0.8	0.2	3.2	0.9	0.2	4.4

*It is difficult to interpret because the upper bound of the estimated confidence interval is infinite.

Table 5. Demographic characteristics of 5th (2019), and 6th (2020) follow-up participants as reported in the adult smoker panel

Unit: number of participants (%)

Type	Frequency (percentage)
Total	246 (100)
Age	
19-29	32 (13.0)
30-39	62 (25.2)
40-49	83 (33.7)
50-59	33 (13.4)
60-69	27 (11.0)
70 or older	9 (3.7)
Current smoking status	
Smoking	185 (75.2)
Non-smoking	61 (24.8)
Type of attempt to quit smoking	
Group 1: no attempt to quit smoking	109 (44.3)
Group 2: failure to quit smoking at the time of investigation after multiple attempts	76 (30.9)
Group 3: keep smoking cessation at the time of investigation after multiple attempts	23 (9.3)
Group 4: quit smoking success at once	38 (15.5)
Type of cigarette product use (among smokers)	
Tobacco only	125 (51.9)
(Liquid-type) e-cigarette only	5 (2.1)
Heated tobacco only	30 (12.5)
Both tobacco and e-cigarette	12 (5.0)
Both tobacco and heated tobacco	9 (3.7)
Both e-cigarette and heated tobacco	1 (0.4)
All types of cigarettes	3 (1.2)
Type of survey	
Online survey	182 (74.0)
Telephone survey	64 (26.0)

Table 6. Comparison of smoking behavior among 5th (2019) and, 6th (2020) follow-up participants as reported in the adult smoker panel (1)

Type	5th follow-up N (%)	6th follow-up N (%)	% difference	95% CI	
Total	246 (100.0)				
Current smoking status					
Smoking	184 (74.8)	185 (75.2)	-0.4	-8.1	7.3
Non-smoking	62 (25.2)	61 (24.8)			
Type of behavioral steps to quit smoking					
Step before consideration	63 (25.8)	48 (22.2)	3.6	-4.2	11.4
Step on consideration	69 (28.3)	69 (31.9)	-3.7	-12.1	4.7
Step on preparation	50 (20.5)	38 (17.6)	2.9	-4.3	10.1
Step on practice and maintenance	62 (25.4)	61 (28.3)	-2.8	-11.0	5.3
Type of attempt to quit smoking					
Group 1: no attempt to quit smoking	87 (35.4)	109 (44.3)	-8.9	-17.6	-0.3
Group 2: failure to quit smoking at the time of investigation after multiple attempts	97 (39.4)	76 (30.9)	8.5	0.1	16.9
Group 3: keep smoking cessation at the time of investigation after multiple attempts	21 (8.5)	23 (9.3)	-0.8	-5.9	4.2
Group 4: attempt to quit smoking successful	41 (16.7)	38 (15.5)	1.2	-5.3	7.7
Type of cigarette product use (among smokers)					
Tobacco	126 (70.4)	125 (69.0)	1.3	-8.2	10.8
E-cigarette only, Both tobacco and e-cigarette	14 (7.8)	17 (9.4)	-1.6	-7.4	4.2
Heated tobacco only, Both e-cigarette and heated tobacco	39 (21.8)	39 (21.6)	0.2	-8.3	8.8
No smoking for more than one day (24 hours)					
Yes	97 (52.7)	76 (48.7)	4.0	-6.7	14.7
No smoking for the last 6 months or more					
Yes	5 (5.2)	28 (36.8)	-31.7	-43.4	-20.0
Daily life stress					
Yes	115 (59.6)	107 (58.2)	6.1	-3.9	16.1
PTEDS-Average					
Less than 1.6 (no abnormality/normal)	127 (51.6)	87 (47.0)	4.6	-4.9	14.1
1.6 point-less than 2.5 point (lasting resentment)	92 (37.4)	74 (40.0)	-2.6	-11.9	6.7
Over 2.5 point (extremely/very Resentment)	27 (11.0)	24 (13.0)	-2.0	-8.2	4.2
Experience of feeling sad for more than two weeks					
Yes	39 (15.9)	40 (21.7)	-5.9	-13.4	1.6
Health level compared to peers of the same age					
Good	53 (21.5)	38 (20.7)	0.9	-6.9	8.7
Normal	151 (61.4)	116 (63.0)	-1.7	-10.9	7.6
Bad	42 (17.1)	30 (16.3)	0.8	-6.3	7.9

Table 7. Comparison of smoking behavior among 5th (2019), and 6th (2020) follow-up participants as reported in the adult smoker panel (2)

Type	5th follow-up Average (Standard deviation)	6th follow-up Average (Standard deviation)	t	p-value
Average daily cigarette smoking amount (units)	13.6 (6.8)	13.7 (6.1)	-0.20	0.842
Average number of days used for one bottle of liquid e-cigarette used (days)	11.9 (10.2)	3.4 (2.4)	3.27	0.005
Average daily heated cigarette smoking amount (units)	12.2 (10.2)	14.9 (6.3)	-1.19	0.238

역학 · 관리보고서 2

2020년 노인 결핵검진사업 결과 분석

질병관리청 감염병정책국 결핵정책과 **김희애, 신지연, 인혜경, 심은혜***
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초 록

질병관리청은 결핵 발생과 사망이 높은 만 65세 이상 노인의 결핵을 조기 발견하고, 타인으로의 전파를 차단하기 위하여 2020년 전국 노인 결핵검진사업을 실시하였다. 검진방법은 이동검진, 방문검진, 검진기관 연계 상시검진으로 이루어졌고, 설문조사와 흉부X선 검사를 1차적으로 실시하여 유증상자·유소견자에 대해 객담검사를 실시하였다. 검진 목표 190,000명 중 134,478명(70.8%)이 검진사업에 참여하였다.

흉부X선 검사(134,467건)와 객담검사(17,647건)를 실시하여 결핵환자 98명(10만 명당 72.9명)을 발견하였고, 이 중, 7명이 약제내성 결핵환자였다. 이는 2020년 결핵신환자 발생률(10만 명당 38.8명)에 비해 약 1.9배 높은 수준으로 남성, 고연령, 지역사회 거주, 독거, 흡연, 결핵 증상이 있는 경우, 결핵 가족력이 있는 경우에 결핵 발생률이 높은 것으로 확인되었다. 또한, 결핵으로 확진된 98명 중 52.0%(51명)가 흉부X선 검사에서 비활동성 결핵으로 확인되었다. 2018~2019년 노인 결핵검진 시범사업을 통해 발견된 결핵환자는 일반 인구집단에 비해 결핵 치료성공률은 높고 사망률은 감소한 것으로 확인되었다. 이는 검진사업을 통해 결핵환자를 조기 발견하고 사후관리 함으로써 치료 순응도가 향상된 결과로 해석된다.

질병관리청은 2021년 전국 노인 결핵검진사업 대상을 취약노인 뿐만 아니라 거동불편 장애인까지 확대하여 추진 중에 있다. 이를 통해 사각지대의 결핵환자를 조기 발견·치료하고 타인으로의 전파를 차단하여 우리나라 결핵발생률을 낮추는데 기여하고자 한다.

주요 검색어: 결핵, 노인, 결핵검진, 흉부X선 검사, 객담검사, 발생률

들어가는 말

결핵은 전 세계적으로 매년 1,000만 명 이상이 진단되고 142만 명 이상이 사망하는 질병부담이 높은 질병이다[1]. 우리나라는 2011년(39,557명, 인구 10만 명당 78.9명) 결핵 신환자수 최고치를 기록한 이후 매년 7.3%씩 감소하여 2020년 19,933명(인구 10만 명당 38.8명)까지 감소하였다[2]. 그러나 만 65세 이상 노인 인구의 결핵 발생 및 사망 비율은 매년 증가하였고, 2020년 전체 결핵 환자의 49.1%를 차지하였다[3](그림 1).

이에, 질병관리청에서는 노인 결핵 발생 및 사망 감소를 위해서 2018년과 2019년 노인 결핵검진 시범사업을 실시하고, 검진 프로토콜을 마련하였다. 이를 바탕으로 2020년 노인 결핵검진사업을 전국으로 확대 시행하였다.

이 글에서는 「2020년 노인 결핵검진사업」의 결과를 분석하고 노인 대상 결핵예방관리 정책을 제시하고자 한다.

몸 말

2020년 4월부터 12월까지 전국 만 65세 이상 노인을 대상으로 검진을 실시, 총 134,478명이 검진에 참여하였다. 검진 접근성을 높이기 위해 검진차량을 통한 이동 검진, 휴대용 X선 장비를 활용한 방문 검진, 검진기관(복십자의원, 대한결핵협회 지부)과 연계한 상시검진을 실시하여 검진 참여율을 높였다.

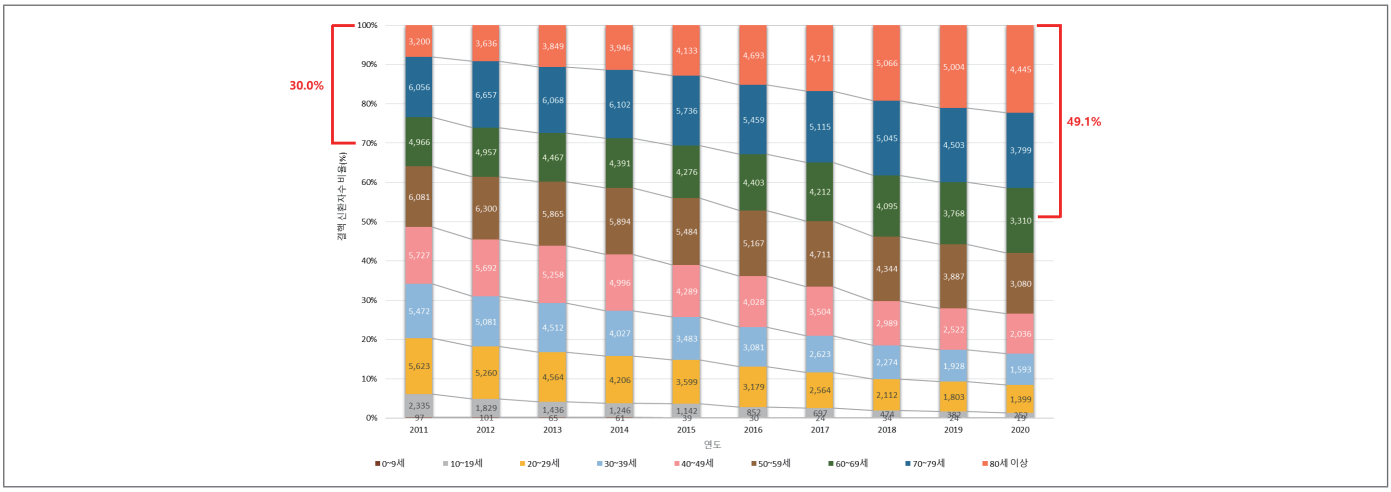


그림 1. 2011~2020년 연령별 결핵 신환자 수 및 비율

*자료원: 2020년 결핵환자 신고현황 연보, 질병관리청

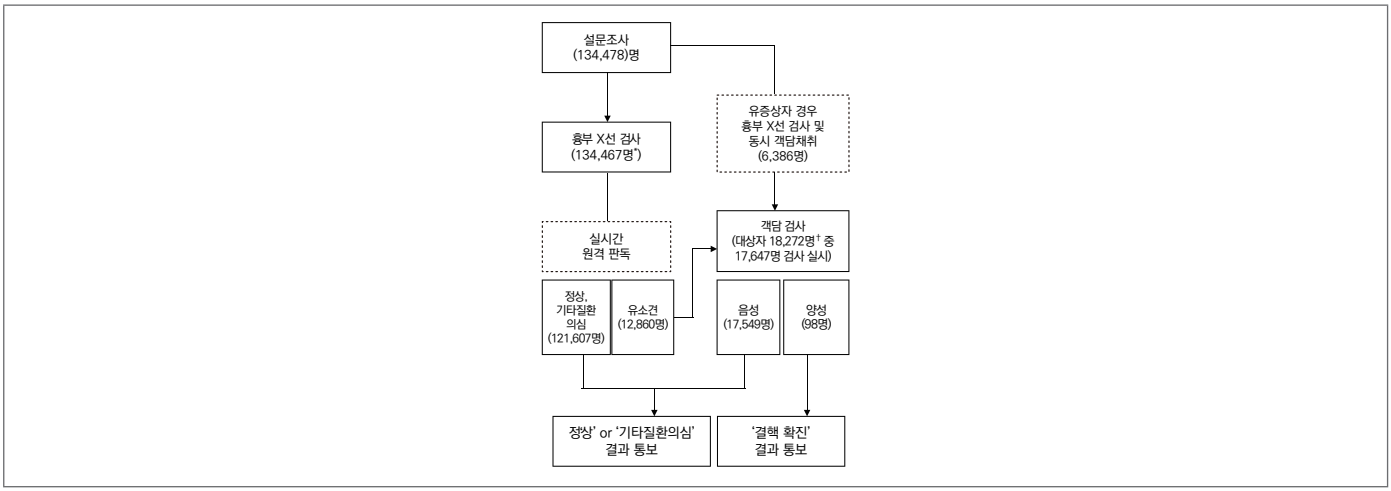


그림 2. 결핵검진 절차

*흉부X선 검사를 거부한 11명에 대해서는 객담검사만 실시

†유증상이면서 유소견자인 974명 제외

결핵검진사업 참여에 동의한 대상자들에게 설문조사, 흉부X선 검사 및 실시간 원격판독을 실시하였다. 객담검사는 결핵 유증상자(설문조사 시 2주 이상 기침 응답자) 또는 흉부X선 상 과거 폐결핵을 앓았던 흔적이 있거나 현재 활동성 폐결핵이 의심되는 경우 당일과 익일 객담을 채취하여 검사를 실시하였다. 검사종류는 도말검사, 배양검사, 결핵균핵산증폭검사(이하, PCR), Xpert MTB/RIF(도말 양성자에 한함), 신속감수성검사 및 통상감수성검사(배양 양성자에 한함), 균동정검사(배양 비결핵 항산균에 한함)를 실시하였다(그림 2).

사업 참여자의 일반적 특성, 결핵확진자 및 비활동성 결핵확진자의 임상적 특성은 빈도와 백분율로 나타내었고, 결핵확진자 특성별 결핵 발생 분석을 위해 T검정과 카이제곱 검정을 실시하였다.

1. 검진자 및 결핵환자의 일반적 특성

2020년 노인 결핵검진사업의 최우선순위 대상자는 건강보험 가입자보다 결핵발생률이 높은 의료급여수급노인, 검진 접근성이 떨어지는 재가와상노인(장기요양급여 3·4·5등급 판정자 중 자택거주자)이며, 차순위 검진대상자는 독거노인, 차상위계층노인, 허약노인 등이다[2].

검진사업 참여자 134,478명의 일반적 특성은 여성 75.6%(101,626명), 75세 이상 73.4%(98,763명), 의료급여수급자 17.7%(23,849명), 지역사회거주 51.4%(69,127명), 독거 21.8%(29,360명), 기저질환이 있는 경우 41.2%(55,433명), 거동불편자(와상 포함) 50.0%(67,288명), 결핵증상이 있는 경우

표 1. 결핵검진사업 참여자의 일반적 특성

구분	검진참여자					
	전체		지역사회		노인의료복지시설	
	n	%	n	%	n	%
계	134,478	100.0	69,127	51.4	65,351	48.6
성별						
남자	32,852	24.4	19,269	27.9	13,583	20.8
여자	101,626	75.6	49,858	72.1	51,768	79.2
연령						
≤ 64	15,627	11.6	7,282	10.5	8,345	12.8
65~69	7,718	5.8	5,024	7.3	2,694	4.1
70~74	12,370	9.2	8,859	12.8	3,511	5.3
75~79	20,900	15.5	13,734	19.9	7,166	11.0
≥ 80	77,863	57.9	34,228	49.5	43,635	66.8
BMI (Kg/m²)						
저체중(<18.5)	17,113	12.7	4,566	6.6	12,547	19.2
정상(18.5~22.9)	63,731	47.4	32,130	46.4	31,601	48.4
과체중(23.0~24.9)	27,549	20.5	16,564	24.0	10,985	16.8
비만(≥25.0)	26,083	19.4	15,865	23.0	10,218	15.6
무응답	2	0.0	2	0.0	0	0.0
검진지역						
서울	13,862	10.3	6,884	10.0	6,978	10.7
부산	9,950	7.4	5,865	8.5	4,085	6.3
대구	8,714	6.5	5,313	7.7	3,401	5.2
인천	7,396	5.5	3,073	4.4	4,323	6.6
광주	4,543	3.4	3,293	4.8	1,250	1.9
대전	5,033	3.7	3,309	4.8	1,724	2.6
울산	1,987	1.5	1,432	2.1	555	0.9
세종	732	0.5	508	0.7	224	0.3
경기	16,823	12.5	4,456	6.4	12,367	18.9
강원	6,782	5.0	3,011	4.4	3,771	5.8
충북	6,259	4.7	3,278	4.7	2,981	4.6
충남	10,189	7.6	6,245	9.0	3,944	6.0
전북	10,626	7.9	9,096	13.2	1,530	2.3
전남	8,895	6.6	2,822	13.2	1,530	2.3
전남	8,895	6.6	2,822	4.1	6,073	9.3
경북	10,046	7.5	4,189	6.1	5,857	9.0
경남	9,694	7.2	5,646	8.2	4,048	6.2
제주	2,947	2.2	707	1.0	2,240	3.4

표 1. *(계속)* 결핵검진사업 참여자의 일반적 특성

구분	검진참여자					
	전체		지역사회		노인의료복지시설	
	n	%	n	%	n	%
의료보장정보						
건강보험(직장, 지역)	107,618	80.0	57,710	83.5	49,908	76.4
의료급여(1종, 2종)	23,849	17.7	9,785	14.2	14,064	21.5
조회 불가	3,011	2.3	1,632	2.4	1,379	2.1
거주 형태						
의료복지시설 거주	65,351	48.6	0	0.0	65,351	100.0
지역사회 거주	69,127	51.4	69,127	100.0	0	0.0
독거						
예	29,360	21.8	29,360	42.5	0	0.0
아니오	4,885	3.6	4,885	7.1	0	0.0
의료복지시설 거주	65,351	48.6	0	0.0	65,351	100.0
무응답	34,882	26.0	34,882	50.5	0	0.0
흡연(과거력 포함)						
예	8,575	6.4	6,057	8.8	2,518	3.9
아니오	125,901	93.6	63,070	91.2	62,831	96.1
무응답	2	0.0	0	0.0	2	0.0
기저질환						
예	55,433	41.2	29,961	43.3	25,472	39.0
아니오	79,045	58.8	39,166	56.7	39,879	61.0
신체활동						
정상	67,190	50.0	48,902	70.7	18,288	28.0
거동불편(휠체어 등 보조기구 사용)	49,929	37.1	18,981	27.5	30,948	47.4
와상	17,359	12.9	1,244	1.8	16,115	24.6
결핵증상(2주 이상 기침 등)						
예	14,225	10.6	9,442	13.7	4,783	7.3
아니오	120,253	89.4	59,685	86.3	60,568	92.7
결핵 과거력						
예	2,816	2.1	1,956	2.8	860	1.3
아니오	117,466	87.3	60,276	87.2	57,190	87.5
무응답	14,196	10.6	6,895	10.0	7,301	11.2
결핵환자 가족력						
예	1,348	1.0	627	0.9	721	1.1
아니오	112,783	83.9	60,966	88.2	51,817	79.3
무응답	20,347	15.1	7,534	10.9	12,813	19.6
검진대상 우선순위						
최우선순위 검진대상자 소계	87,105	64.8	39,206	56.7	47,899	73.3
의료급여수급 노인	15,905	11.9	8,259	11.9	7,646	11.7
재가와상 노인	71,200	52.9	30,947	44.8	40,253	61.6
차순위 검진대상자 소계	47,373	35.2	29,921	43.3	17,452	26.7
독거노인	11,187	8.3	11,187	16.2	0	0.0
차상위 계층	7,195	5.4	1,430	2.1	5,765	8.8
허약노인	2,147	1.6	1,742	2.5	405	0.6
만 65세 미만 시설 입소자 및 종사자	14,300	10.6	6,367	9.2	7,933	12.1
기타*	12,544	9.3	9,195	13.3	3,349	5.1

*만 65세 이상 건강보험(직장, 지역) · 건강취약계층(지역보건의료정보시스템(PHIS) 분류 조건 참고), 만 65세 미만 지역사회 거주자 등

10.6%(14,225명), 결핵 과거력이 있는 경우 2.1%(2,816명), 결핵환자 가족력이 있는 경우 1.0%(1,348명)였다.

지역사회 검진대상자(69,127명)는 흡연 8.8%(6,057명), 기저질환 43.3%(29,961명), 결핵 증상이 있는 경우 13.7%(9,442명), 결핵 과거력이 있는 경우 2.8%(1,956명)가 노인의료복지시설 검진대상자에 비하여 높게 나타났다. 노인의료복지시설 검진대상자(65,351명)는 75세 이상 77.8%(50,801명), 저체중 19.2%(12,547명), 의료급여수급자 21.5%(14,064명), 거동불편자(와상 포함) 72.0%(47,063명)가 지역사회 검진대상자에 비하여 높은 것으로 확인되었다(표 1).

최우선순위 검진대상자는 64.8%(87,105명)로, 재가와상노인 52.9%(71,200명), 의료급여수급노인 11.9%(15,905명)로 확인되었다. 차순위 검진대상자는 35.2%(47,373명)로, 만 65세 미만 시설 입소자 및 종사자 10.6%(14,300명), 독거노인 8.3%(11,187명), 차상위계층노인 5.4%(7,195명), 허약노인 1.6%(2,147명)로 확인되었다(표 1).

2. 결핵확진자의 일반적 특성

사업에 참여한 134,478명 중 98명(10만 명당 72.9명)이 결핵확진자로 확인되었다. 결핵확진자의 일반적 특성은 남성 45.9%(45명), 75세 이상 93.9%(92명), 지역사회 거주 56.1%(55명), 독거 28.5%(28명), 흡연 11.2%(11명), 거동불편자(와상 포함)

표 2. 결핵확진자의 일반적 특성

구분	결핵확진자			
	n	%	발생률(10만 명당)	유의수준
계	98	100.0	72.9	
성별				<0.001
남자	45	45.9	137.0	
여자	53	54.1	52.2	
연령				<0.001
≤ 64	0	0.0	0.0	
65~69	2	2.0	25.9	
70~74	4	4.1	32.3	
75~79	20	20.4	95.7	
≥ 80	72	73.5	92.5	
BMI (Kg/m²)				0.032
저체중(<18.5)	12	12.2	70.1	
정상(18.5~22.9)	60	61.2	94.1	
과체중(23.0~24.9)	18	18.4	65.3	
비만(≥25.0)	8	8.2	30.7	
무응답	0	0.0	0.0	
검진지역				0.164
서울	13	13.3	93.8	
부산	5	5.1	50.3	
대구	5	5.1	57.4	
인천	3	3.0	40.6	
광주	9	9.2	198.1	
대전	5	5.1	99.3	
울산	3	3.1	151.0	
세종	1	1.0	136.6	
경기	10	10.2	59.4	
강원	7	7.1	103.2	
충북	4	4.1	63.9	
충남	10	10.2	98.1	
전북	3	3.1	28.2	
전남	5	5.1	56.2	
경북	8	8.2	79.6	
경남	5	5.1	51.6	
제주	2	2.0	67.9	

41.9%(41명), 결핵 증상이 있는 경우 30.6%(30명), 결핵 가족력이 있는 경우 2.0%(2명)였다. 남성, 고연령, 결핵증상이 있는 경우 결핵 발생률이 높았고, 통계적으로 유의미한 차이를 보였다(p<0.05)(표 2).

결핵확진자(98명) 중 최우선순위 검진대상자가 71.4%(70명)로 인구 10만 명당 80.4명이였으며, 차순위 검진대상자가 28.6%(28명)로, 인구 10만 명당 59.1명으로 확인되었다. 검진대상자 우선순위 관계없이 독거노인(인구 10만명당 89.4명)과 재가와상노인(인구 10만명당 82.9명)이 결핵 발생률이 높은 것으로 확인되었다(표 2).

표 2. *(계속)* **결핵확진자의 일반적 특성**

구분	결핵확진자			
	n	%	발생률(10만 명당)	유의수준
의료보장정보				0.450
건강보험(직장, 지역)	78	79.6	72.5	
의료급여(1종, 2종)	16	16.3	67.1	
조회 불가	4	4.1	132.8	
거주 형태				0.418
의료복지시설 거주	43	43.9	65.8	
지역사회 거주	55	56.1	79.6	
독거				0.227
예	28	28.5	95.4	
아니오	1	1.0	20.5	
의료복지시설 거주	43	43.9	65.8	
무응답	26	26.5	74.5	
흡연(과거력 포함)				0.145
예	11	11.2	128.3	
아니오	87	88.8	69.1	
무응답	0	0.0	0.0	
기저질환				0.129
예	33	33.7	59.5	
아니오	65	66.3	82.2	
신체활동				0.196
정상	57	58.1	84.8	
거동불편(휠체어 등 보조기구 사용)	28	28.6	56.1	
와상	13	13.3	74.9	
결핵증상(2주 이상 기침 등)				<0.001
예	30	30.6	210.9	
아니오	68	69.4	56.5	
결핵 과거력				0.310
예	2	2.0	71.0	
아니오	81	82.7	69.0	
무응답	15	15.3	105.7	
결핵환자 가족력				0.278
예	2	2.0	148.4	
아니오	77	78.6	68.3	
무응답	19	19.4	93.4	
검진대상 우선순위				0.170
최우선순위 검진대상자 소계	70	71.4	80.4	
의료급여수급 노인	11	11.2	69.2	
재가와상 노인	59	60.2	82.9	
차순위 검진대상자 소계	28	28.6	59.1	
독거노인	10	10.2	89.4	
차상위 계층	5	5.1	69.5	
허약노인	1	1.1	46.6	
만 65세 미만 시설 입소자 및 종사자	0	0.0	0.0	
기타*	12	12.2	95.7	

*만 65세 이상 건강보험(직장, 지역) · 건강취약계층(지역보건의료정보시스템(PHIS) 분류 조건 참고), 만 65세 미만 지역사회 거주자 등

3. 검진자 및 결핵환자의 검사결과

사업에 참여한 134,478명 중 134,467명이 흉부X선 검사를 실시하였고, 흉부X선 검사를 거부한 11명에 대해서는 객담검사만 실시하였다.

흉부X선 판독결과는 요치료(활동성 폐결핵이거나 결핵성으로 추정), 요관찰(활동성 미정 폐결핵, 결핵의심), 비활동성(과거에 폐결핵이 발생하였으나 현재 치유되어 섬유성 병변 등 흔적이 남아있는 상태), 정상, 기타 질환 의심으로 나눠진다. 검진 참여자의 흉부X선 판독결과는 정상 64.5%(86,742명), 기타 질환 의심 25.9%(34,870명), 비활동성 결핵 8.0%(10,710명), 요관찰 1.5%(1,972명), 요치료 0.1%(173명)로 확인되었다. 설문을 통해 결핵증상이 있거나 흉부X선 상 폐결핵을 앓았던 흔적이 있고 현재 활동성 폐결핵이 의심되는 18,272명 중 객담을 수거한 17,647명을 대상으로 객담검사를 실시하였다. 객담 도말검사 양성률은 0.8%(133명), 객담 배양검사 양성률 0.5%(91명), PCR 양성률 0.2%(33명)였다.

결핵확진자(98명)의 흉부X선 판독결과는 비활동성

표 3. 결핵 검진 참여자의 임상적 특성

	검진 참여자		결핵확진자	
	n	%	n	%
계	**134,478**	**100.0**	**98**	**100.0**
흉부X선				
소계	**134,467**	**100.0**	**98**	**100.0**
정상	86,742	64.5	4	4.1
요치료*	173	0.1	7	7.2
요관찰†	1,972	1.5	24	24.5
비활동성 결핵†	10,710	8.0	51	52.0
기타 질환 의심	34,870	25.9	12	12.2
도말검사				
소계	**17,647**	**100.0**	**98**	**100.0**
양성	133	0.8	63	64.3
음성	17,514	99.2	35	35.7
배양검사				
소계	**17,643**	**100.0**	**98**	**100.0**
양성	91	0.5	89	90.8
음성	16,711	94.7	5	5.1
비결핵항상균§	841	4.8	4	4.1
결핵균핵산증폭검사(PCR)				
소계	**17,641**	**100.0**	**98**	**100.0**
양성	33	0.2	33	33.7
음성	17,499	99.2	62	63.3
비결핵항상균§	104	0.6	1	1.0
오염/검사불능	5	0.0	0	0.0
미실시	0	0	2	2.0
약제감수성 검사				
소계	**–**	**–**	**98**	**100.0**
리팜핀 내성	–	–	1	1.0
이소니아지드 내성	–	–	6	6.1
약제 감수성	–	–	77	78.6
기타	–	–	6	6.1
검사 불능/미입력/미실시	–	–	8	8.2

* '활동성 폐결핵'이거나 결핵성으로 추정되는 '삼출성 흉막염'으로 나타나 결핵치료를 권고하는 경우로 확진을 위한 객담검사가 필요함.

† '활동성미정 폐결핵' 또는 '결핵의심' 소견이 나타난 경우로 보건소 및 의료기관에서 객담검사를 포함한 추가 결핵 검사와 환자의 임상소견 등을 종합한 진료의사의 최종 진단이 필요. 결핵환자로 등록이 안 된 경우에는 1년간 정기적인 추구관찰이 필요함.

† 과거에 폐결핵이 발병하였으나, 현재 치유 되어 섬유성 병변 등 흔적이 남아 있는 상태

§ 결핵균과 나병균을 제외한 항산균을 뜻하며 비결핵항산균으로 인한 질환은 폐질환, 림프절염, 피부 · 연조직 · 골감염증, 파종성 질환 등 특징적인 임상 증후군으로 분류됨.

52.0%(51명), 요관찰 24.5%(24명), 기타 질환 의심 12.2%(12명), 요치료 7.2%(7명), 정상 4.1%(4명)이었다. 객담 도말검사 양성률은 64.3%(63명)이었으며, 객담 배양검사 양성률 90.8%(89명), PCR 양성률 33.7%(33명)이었다. 약제감수성 검사를 실시한 결과 약제 감수성이 있는 환자가 78.6%(77명), 리팜핀 내성이 있는 환자는 1.0%(1명), 이소니아지드(isoniazid, INH) 내성 환자는 6.1%(6명)이었다(표 3).

4. 비활동성 결핵확진자의 특성

사업을 통해 발견한 결핵확진자 98명 중 52.0%(51명)가 흉부X선상 비활동성 결핵으로 확인되었다. 비활동성 결핵확진자(51명)의 특성을 살펴보면 남성 52.9%(27명), 75세 이상 96.0%(49명), 지역사회 거주 62.7%(32명), 결핵 증상 없음 86.3%(44명), 결핵 과거력 없음 72.5%(37명), 결핵 가족력 없음 74.5%(38명)이었고, 기저질환이 있는 경우가 62.7%(32명)를 차지했다. 검사결과는 객담 도말검사 양성 29.4%(15명), 객담 배양검사 양성 94.1%(48명), PCR 양성 27.5%(14명), 약제 내성이 9.8%(5명)이었다(표 4).

표 4. 비활동성 결핵확진자의 일반적, 임상적 특성

구분	비활동성 결핵확진자	
	n	%
계	**51**	**100**
성별		
남자	27	52.9
여자	24	47.1
연령		
≤ 64	–	–
65~69	1	2.0
70~74	1	2.0
75~79	11	21.5
≥ 80	38	74.5
BMI(Kg/m²)		
저체중(<18.5)	7	13.7
정상(18.5~22.9)	34	66.7
과체중(23.0~24.9)	10	19.6
비만(≥25.0)	0	0.0
의료보장정보		
건강보험(직장, 지역)	41	80.4
의료급여(1종, 2종)	6	11.8
무응답	4	7.8
거주형태		
의료복지시설 거주	19	37.3
지역사회 거주	32	62.7
독거		
예	14	27.5
아니오	1	2.0
의료복지시설 거주	19	37.3
무응답	17	33.3

표 4. *(계속)* **비활동성 결핵확진자의 일반적, 임상적 특성**

구분	비활동성 결핵확진자	
	n	%
흡연(과거력 포함)		
예	8	15.7
아니오	43	84.3
신체활동		
정상	31	60.8
거동불편(휠체어 등 보조기구 사용)	15	29.4
와상	5	9.8
결핵증상(2주 이상 기침 등)		
예	7	13.7
아니오	44	86.3
결핵 과거력		
예	1	2.0
아니오	37	72.5
무응답	13	25.5
결핵환자 가족력		
예	1	2.0
아니오	38	74.5
무응답	12	23.5
기저질환		
예	32	62.7
아니오	19	37.3
도말검사		
양성	15	29.4
음성	36	70.6
배양검사		
양성	48	94.1
음성	3	5.9
결핵균핵산증폭검사(PCR)		
양성	14	27.5
음성(NTM포함)	36	70.6
미실시/검사불능	1	1.9
약제감수성 검사		
약제 내성	5	9.8
약제 감수성	40	78.4
미실시/검사불능	6	11.8

맺는 말

2020년 노인 결핵검진사업을 통해 만 65세 이상 노인 134,478명에 대해 흉부X선 촬영 등을 통한 결핵검진을 실시하여 결핵환자 98명(10만 명당 72.9명)을 발견하였다. 이는 2020년 결핵신환자 발생률(10만 명당 38.8명)에 비해 약 1.9배 높은 수준이었다[3].

검진사업 우선순위별 환자 발생은 최우선순위 검진대상자(의료급여수급노인, 재가와상노인)가 차순위 검진대상자(독거노인, 차상위계층, 허약노인 등)에 비해 결핵 발생이 높았다. 검진 우선순위와 무관하게 독거, 재가와상, 차상위계층, 의료급여수급권자, 허약노인 순으로 발생이 높아짐을 확인할 수 있었다. 이는 기존 선행연구들과 일치하는 결과로 사회·경제적 요인, 건강상태 등이 결핵 발생에 영향을 미친다는 것을 확인할 수 있었다[4].

노인 폐결핵은 임상적, 방사선학적으로 비정형적인 소견을

보이는 경우가 많아 결핵 진단 및 치료의 지연이 발생하고 있어, 결핵 전파의 위험을 높일 수 있는 특성을 지녔다[5,6]. 따라서 노인 폐결핵의 빠른 진단을 위해서는 비정형적 증상 및 흉부X선 소견상 이상을 보일 경우 결핵을 의심하고 객담검사를 실시하여야 한다[7,8]. 본 사업에서는 흉부X선 상 비활동성 결핵 소견자에게도 객담검사를 적극적으로 실시하여 환자 발견율을 높이고자 하였다. 그 결과 결핵으로 확진된 98명 중 52.0%(51명)가 흉부X선 검사에서 비활동성 결핵이었고, 2주 이상 기침 등 결핵 증상이 없는 환자가 69.4%(68명)에 달해, 노인 결핵은 임상적으로 비정형적인 소견을 보인다는 기존 선행연구 결과와 일치하였다[9]. 따라서 만 65세 이상 노인의 경우 결핵 증상이 없더라도 매년 1회 정기적으로 결핵검진을 실시하는 것이 필요하다.

노인 결핵 환자는 비정형적인 특성으로 인해 진단이 늦어지고, 면역력 저하 기저질환 동반, 신체기능 저하로 인해 약제 부작용 발생 빈도가 높아 치료성공률이 낮기 때문에, 노인 결핵환자를 조기 발견·치료하여 치료성공률을 높이고 사망률을 감소시키는 것이 중요하다[10]. 2018년, 2019년 노인 결핵검진 시범사업을 통해 발견된 결핵환자의 치료성공률(2018년 82.4%, 2019년 88.7%)은 일반인구집단의 치료성공률(2018년 76.2%, 2019년 74.7%)에 비해서 높았고, 사망률(2018년 12.2%, 2019년 11.3%)은 일반인구집단(2018년 22.3%, 2019년 22.3%)에 비해 감소한 것을 확인할 수 있었다[11,12]. 이는 검진사업을 통하여 환자를 조기 발견하고 치료 연계 등의 사후관리를 통해 치료순응도가 향상되어, 치료성공률은 높아지고 사망률은 감소한 것으로 보인다.

질병관리청은 2021년에도 전국 노인 결핵검진사업을 지속 추진 중에 있다. 검진대상은 결핵검진 기회가 적고 결핵 발생률이 높은 의료급여수급·재가와상·독거 등 사회·경제적으로 취약한 노인들이다[13]. 또한, 신체적·정신적 장애로 인하여 거동이 불편한 장애인들을 대상으로도 찾아가는 결핵 검진을 확대하여 결핵검진 사각지대 해소를 목표로 한다. 이를 통해 결핵환자를 조기 발견하고 치료성공률은 높여 타인으로의 전파를 차단하여 우리나라 결핵발생률을 낮추는데 기여하고자 한다.

① 이전에 알려진 내용은?

국내 결핵 환자 수는 지속적으로 감소하고 있으나, 노인의 경우 고령화, 비정형적인 결핵 증상과 면역력 저하 기저질환, 신체 기능 저하 등으로 결핵 발병 가능성이 높으나 결핵진단이 지연되고 있어 노인층의 결핵 발생률과 사망률이 높아지고 있다.

② 새로이 알게 된 내용은?

2020년 노인 결핵검진사업을 통해 134,478명을 검진하여 결핵환자 98명(10만 명당 72.9명)을 발견하였다. 이는 2020년 결핵신환자 발생률(10만 명당 38.8명)의 약 1.9배 높은 수준이다. 검진사업 우선순위별 환자 발생은 최우선순위 검진대상자(의료수급노인 및 재가와상노인)가 결핵 발생이 높아지는 것을 확인하였다. 결핵확진자의 52.0%(51명)는 흉부X선 검사에서 비활동성 결핵이었으나 객담검사를 통해서 결핵으로 확인되었다.

2018~2019년 시범사업을 통해 발견된 결핵환자는 일반 인구집단에 비해 치료성공률이 높고 사망률이 감소한 것으로 확인되었다.

③ 시사점은?

노인결핵 발생률·사망률 감소를 위해서는 결핵검진 기회가 적고 결핵 발생률이 높은 취약노인에게 찾아가는 결핵검진을 실시하고 흉부X선 상 비활동성 결핵이더라도 객담검사를 실시하여 적극적으로 환자를 발견해낼 필요가 있다. 또한, 의료복지시설 거주자에 비하여 지역사회 거주자에게서 결핵발생이 높은 것으로 확인되었다. 노인의료복시시설 거주자에 대한 의무검진 제도로 인해 결핵환자를 조기 발견하게 되어 결핵발생률이 낮게 나타났을 가능성이 있다.

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Abstract

Results of the 2020 elderly Tuberculosis (TB) screening in Republic of Korea

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The Korea Disease Control and Prevention Agency (KDCA) conducted an early-stage tuberculosis (TB) screening project for the elderly in 2020. The aim was to detect TB in seniors over the age of 65 living in regions with high TB incidences and high TB-related deaths, and to prevent transmission.

The screening method consisted of mobile examinations, visiting examinations, and regular examinations linked to examination institutions, and the examination survey and chest X-ray examination were conducted primarily, and a sputum examination was conducted for abnormal findings of chest X-ray and TB symptoms.

134,478 people were participated in total. Chest x-ray (134,467) and sputum tests (17,647) were performed and 98 TB patients (72.9 people per 100,000 population) were reported.

This was about 1.9 times higher than the incidence of TB in the general population (38.8 people per 100,000 population, 19,933 people). In the case of males, the elderly people, smokers, community residences, living alone, symptoms of TB, and histories of TB within the family show increased the TB incidence. In addition, 52.0% (51) of TB confirmed patients were identified as having inactive TB chest X-ray examination.

Furthermore, as a result of analyzing the treatment success rate of TB patients in a 2018-2019 project for TB screening for the elderly, it was found that the treatment success rate was higher than that of the general population. This confirmed that early detection and follow-up of TB patients increased the success rate of treatment for TB.

The KDCA continued its elderly TB screening project in 2021. Through this, early detection and treatment of TB patients will prevent transmission. It intends to contribute to lowering the incidence of tuberculosis in Korea.

Keywords: Tuberculosis (TB), Elderly, Chest X-ray examination, Sputum examination, Incidence

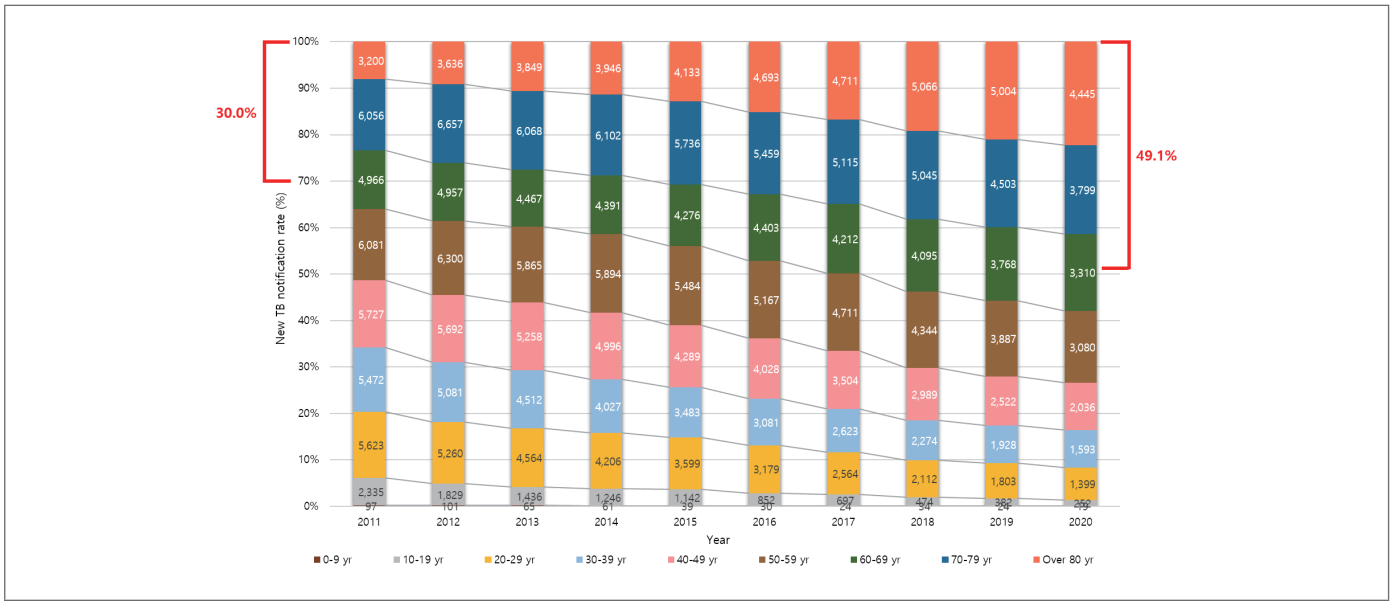


Figure 1. New tuberculosis (TB) notification rates by age, 2011–2020

* Source: Annual Report on the Notified Tuberculosis in Korea, 2020. KDCA

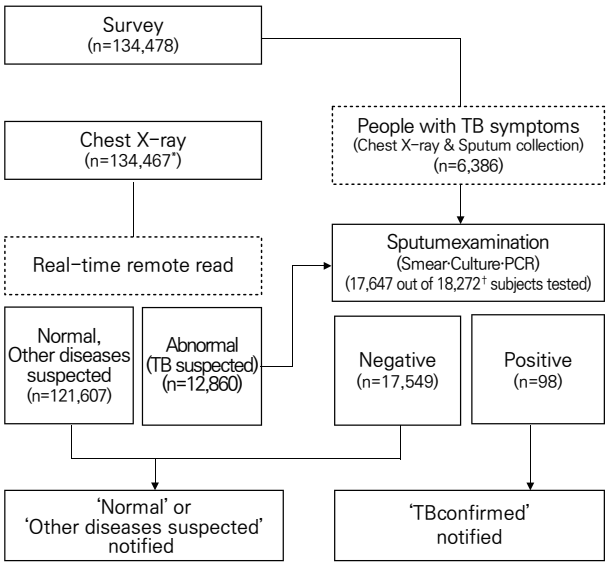


Figure 2. Tuberculosis (TB) screening procedure

* Only sputum examination is performed on 11 patients who refused chest X-ray examination.

† Excluding 974 people who have TB symptoms and abnormal result

Table 1. Characteristics of tuberculosis (TB) screening participants

Variables	Participants					
	Total		Community		Long-term care facility	
	n	%	n	%	n	%
Total	134,478	100.0	69,127	51.4	65,351	48.6
Sex						
Male	32,852	24.4	19,269	27.9	13,583	20.8
Female	101,626	75.6	49,858	72.1	51,768	79.2
Age						
≤ 64	15,627	11.6	7,282	10.5	8,345	12.8
65-69	7,718	5.8	5,024	7.3	2,694	4.1
70-74	12,370	9.2	8,859	12.8	3,511	5.3
75-79	20,900	15.5	13,734	19.9	7,166	11.0
≥ 80	77,863	57.9	34,228	49.5	43,635	66.8
BMI (Kg/m^2)						
Under weight(<18.5)	17,113	12.7	4,566	6.6	12,547	19.2
Normal weight(18.5-22.9)	63,731	47.4	32,130	46.4	31,601	48.4
Over weight(23.0-24.9)	27,549	20.5	16,564	24.0	10,985	16.8
Obese(≥25.0)	26,083	19.4	15,865	23.0	10,218	15.6
Unknown	2	0.0	2	0.0	0	0.0
Area						
Seoul	13,862	10.3	6,884	10.0	6,978	10.7
Busan	9,950	7.4	5,865	8.5	4,085	6.3
Daegu	8,714	6.5	5,313	7.7	3,401	5.2
Incheon	7,396	5.5	3,073	4.4	4,323	6.6
Gwangju	4,543	3.4	3,293	4.8	1,250	1.9
Daejeon	5,033	3.7	3,309	4.8	1,724	2.6
Ulsan	1,987	1.5	1,432	2.1	555	0.9
Sejong	732	0.5	508	0.7	224	0.3
Gyeonggi	16,823	12.5	4,456	6.4	12,367	18.9
Gangwon	6,782	5.0	3,011	4.4	3,771	5.8
Chungbuk	6,259	4.7	3,278	4.7	2,981	4.6
Chungnam	10,189	7.6	6,245	9.0	3,944	6.0
Jeonbuk	10,626	7.9	9,096	13.2	1,530	2.3
Jeonnam	8,895	6.6	2,822	13.2	1,530	2.3
Jeonnam	8,895	6.6	2,822	4.1	6,073	9.3
Gyeongbuk	10,046	7.5	4,189	6.1	5,857	9.0
Gyeongnam	9,694	7.2	5,646	8.2	4,048	6.2
Jeju	2,947	2.2	707	1.0	2,240	3.4
Type of insurance						
National health insurance (work, district)	107,618	80.0	57,710	83.5	49,908	76.4
Medical care (type1, 2)	23,849	17.7	9,785	14.2	14,064	21.5
None	3,011	2.3	1,632	2.4	1,379	2.1
Residence type						
Long-term-care facility	65,351	48.6	0	0.0	65,351	100.0
Community	69,127	51.4	69,127	100.0	0	0.0

Table 1. *(Continued)* Characteristics of tuberculosis (TB) screening participants

Variables	Participants					
	Total		Community		Long-term care facility	
	n	%	n	%	n	%
Living alone						
Yes	29,360	21.8	29,360	42.5	0	0.0
No	4,885	3.6	4,885	7.1	0	0.0
Long-term-care facility	65,351	48.6	0	0.0	65,351	100.0
Unknown	34,882	26.0	34,882	50.5	0	0.0
Smoking (include ex-smoker)						
Yes	8,575	6.4	6,057	8.8	2,518	3.9
No	125,901	93.6	63,070	91.2	62,831	96.1
Unknown	2	0.0	0	0.0	2	0.0
Underlying disease						
Yes	55,433	41.2	29,961	43.3	25,472	39.0
No	79,045	58.8	39,166	56.7	39,879	61.0
Active daily living						
Normal	67,190	50.0	48,902	70.7	18,288	28.0
Physically disabled	49,929	37.1	18,981	27.5	30,948	47.4
Bed-ridden	17,359	12.9	1,244	1.8	16,115	24.6
TB symptoms (Cough over 2 weeks and other symptoms)						
Yes	14,225	10.6	9,442	13.7	4,783	7.3
No	120,253	89.4	59,685	86.3	60,568	92.7
TB History						
Yes	2,816	2.1	1,956	2.8	860	1.3
No	117,466	87.3	60,276	87.2	57,190	87.5
Unknown	14,196	10.6	6,895	10.0	7,301	11.2
History of TB within the family						
Yes	1,348	1.0	627	0.9	721	1.1
No	112,783	83.9	60,966	88.2	51,817	79.3
Unknown	20,347	15.1	7,534	10.9	12,813	19.6
Priority of examination						
Priority examination target	87,105	64.8	39,206	56.7	47,899	73.3
Elderly with medical care	15,905	11.9	8,259	11.9	7,646	11.7
Elderly with Bed-ridden at home (include Physically disabled)	71,200	52.9	30,947	44.8	40,253	61.6
Second priority examination target	47,373	35.2	29,921	43.3	17,452	26.7
Living alone	11,187	8.3	11,187	16.2	0	0.0
Near poverty groups	7,195	5.4	1,430	2.1	5,765	8.8
Weak elderly	2,147	1.6	1,742	2.5	405	0.6
Residents and workers of facilities under the age of 65	14,300	10.6	6,367	9.2	7,933	12.1
Etc*	12,544	9.3	9,195	13.3	3,349	5.1

* 65 years of age or older National health insurance · Health vulnerable group, Community Residents under the age of 65, etc.

Table 2. Characteristics of tuberculosis (TB) patients

Variables	TB patients			
	n	%	Incidence rate (per 100,000 people)	*p*-value
Total	98	100.0	72.9	
Sex				<0.001
Male	45	45.9	137.0	
Female	53	54.1	52.2	
Age				<0.001
≤ 64	0	0.0	0.0	
65–69	2	2.0	25.9	
70–74	4	4.1	32.3	
75–79	20	20.4	95.7	
≥ 80	72	73.5	92.5	
BMI (Kg/m^2)				0.032
Under weight(<18.5)	12	12.2	70.1	
Normal weight(18.5–22.9)	60	61.2	94.1	
Over weight(23.0–24.9)	18	18.4	65.3	
Obese(≥25.0)	8	8.2	30.7	
Unknown	0	0.0	0.0	
Area				0.164
Seoul	13	13.3	93.8	
Busan	5	5.1	50.3	
Daegu	5	5.1	57.4	
Incheon	3	3.0	40.6	
Gwangju	9	9.2	198.1	
Daejeon	5	5.1	99.3	
Ulsan	3	3.1	151.0	
Sejong	1	1.0	136.6	
Gyeonggi	10	10.2	59.4	
Gangwon	7	7.1	103.2	
Chungbuk	4	4.1	63.9	
Chungnam	10	10.2	98.1	
Jeonbuk	3	3.1	28.2	
Jeonnam	5	5.1	28.2	
Jeonnam	5	5.1	56.2	
Gyeongbuk	8	8.2	79.6	
Gyeongnam	5	5.1	51.6	
Jeju	2	2.0	67.9	
Type of insurance				0.450
National health insurance (work, district)	78	79.6	72.5	
Medical care (type1, 2)	16	16.3	67.1	
None	4	4.1	132.8	
Residence type				0.418
Long-term-care facility	43	43.9	65.8	
Community	55	56.1	79.6	

Table 2. *(Continued)* Characteristics of tuberculosis (TB) patients

Variables	TB patients			
	n	%	Incidence rate (per 100,000 people)	*p*-value
Living alone				0.227
Yes	28	28.5	95.4	
No	1	1.0	20.5	
Long-term-care facility	43	43.9	65.8	
Unknown	26	26.5	74.5	
Smoking (include ex-smoker)				0.145
Yes	11	11.2	128.3	
No	87	88.8	69.1	
Unknown	0	0.0	0.0	
Underlying disease				0.129
Yes	33	33.7	59.5	
No	65	66.3	82.2	
Active daily living				0.196
Normal	57	58.1	84.8	
Physically disabled	28	28.6	56.1	
Bed-ridden	13	13.3	74.9	
TB symptoms (Cough over 2 weeks and other symptoms)				<0.001
Yes	30	30.6	210.9	
No	68	69.4	56.5	
TB History				0.310
Yes	2	2.0	71.0	
No	81	82.7	69.0	
Unknown	15	15.3	105.7	
History of TB within the family				0.278
Yes	2	2.0	148.4	
No	77	78.6	68.3	
Unknown	19	19.4	93.4	
Priority of examination				0.170
Priority examination target	70	71.4	80.4	
Elderly with medical care	11	11.2	69.2	
Elderly bed-ridden at home(include Physically disabled)	59	60.2	82.9	
Second priority examination target	28	28.6	59.1	
Living alone	10	10.2	89.4	
Near poverty groups	5	5.1	69.5	
Weak elderly	1	1.1	46.6	
Residents and workers of facilities under the age of 65	0	0.0	0.0	
Etc*	12	12.2	95.7	

* 65 years of age or older National health insurance · health vulnerable group, community residents under the age of 65, etc.

Table 3. Clinical characteristics of tuberculosis (TB) patients diagnosed in the screening

Variables	Participants		TB patients	
	n	%	n	%
Total	**134,478**	**100.0**	**98**	**100.0**
Chest x-ray				
Subtotal	**134,467**	**100.0**	**98**	**100.0**
Normal	86,742	64.5	4	4.1
Need treatment*	173	0.1	7	7.2
Observation required†	1,972	1.5	24	24.5
Inactive TB‡	10,710	8.0	51	52.0
Other diseases suspected	34,870	25.9	12	12.2
Sputum smear				
Subtotal	**17,647**	**100.0**	**98**	**100.0**
Positive	133	0.8	63	64.3
Negative	17,514	99.2	35	35.7
Sputum culture				
Subtotal	**17,643**	**100.0**	**98**	**100.0**
Positive	91	0.5	89	90.8
Negative	16,711	94.7	5	5.1
NTM§	841	4.8	4	4.1
TB-PCR test‖				
Subtotal	**17,641**	**100.0**	**98**	**100.0**
Positive	33	0.2	33	33.7
Negative	17,499	99.2	62	63.3
NTM§	104	0.6	1	1.0
Contamination	5	0.0	0	0.0
Not done	0	0	2	2.0
Drug sensitivity test				
Subtotal	**-**	**-**	**98**	**100.0**
Rifampin(R) Drug Resistance	-	-	1	1.0
Isoniazid(H) Drug Resistance	-	-	6	6.1
Drug sensitivity	-	-	77	78.6
Etc	-	-	6	6.1
Inspection error	-	-	8	8.2

* 'Active pulmonary tuberculosis' or 'exudation pleural effusion' which is presumed to be tuberculosis, suggesting the treatment of tuberculosis, sputum examination for confirmation

† Any suspicion of 'active tuberculosis' or 'suspected tuberculosis', the final diagnosis of the doctor is necessary, including the additional tuberculosis test including sputum examination and the clinical findings of the patient in public health centers and medical institutions

‡ Pulmonary tuberculosis developed in the past but remained healed and traces of fibrotic changes remain

§ Means anti-bacterial bacteria except tuberculosis and leprosy, and diseases caused by non-tuberculosis antibacterial bacteria are classified as characteristic clinical syndromes such as lung disease, lymphadenitis, skin, soft tissue, bone infection, and disseminated disease.

‖ M. tuberculosis-polymerase chain reaction (TB-PCR)

Table 4. Clinical characteristics of Inactive tuberculosis (TB) patients diagnosed in the screening

Variables	Inactive TB patients	
	n	%
Total	51	100
Sex		
Male	27	52.9
Female	24	47.1
Age		
≤ 64	–	–
65–69	1	2.0
70–74	1	2.0
75–79	11	21.5
≥ 80	38	74.5
BMI (kg/m^2)		
Under weight (<18.5)	7	13.7
Normal weight (18.5–22.9)	34	66.7
Over weight (23.0–24.9)	10	19.6
Obese (≥25.0)	0	0.0
Health Insurance		
National health insurance (work, district)	41	80.4
Medical care (type1, 2)	6	11.8
Unknown	4	7.8
Residence type		
Long-term care facility	19	37.3
Community	32	62.7
Living alone		
Yes	14	27.5
No	1	2.0
Long-term-care facility	19	37.3
Unknown	17	33.3
Smoking (include ex-smoker)		
Yes	8	15.7
No	43	84.3
Active daily living		
Normal	31	60.8
Physically disabled	15	29.4
Bed-ridden	5	9.8

Table 4. *(Continued)* Clinical characteristics of Inactive tuberculosis (TB) patients diagnosed in the screening

Variables	Inactive TB patients	
	n	%
TB symptoms (Cough over 2 weeks and other symptoms)		
Yes	7	13.7
No	44	86.3
TB history		
Yes	1	2.0
No	37	72.5
Unknown	13	25.5
History of TB within the family		
Yes	1	2.0
No	38	74.5
Unknown	12	23.5
Underlying disease		
Yes	32	62.7
No	19	37.3
Sputum smear		
Positive	15	29.4
Negative	36	70.6
Sputum culture		
Positive	48	94.1
Negative	3	5.9
TB-PCR test		
Positive	14	27.5
Negative	36	70.6
Not done	1	1.9
Drug sensitivity test		
Drug resistance	5	9.8
Drug sensitivity	40	78.4
Not done	6	11.8

만성질환 통계

1. 현재흡연율 추이, 2007~2019

◈ 만 19세 이상 현재흡연율(연령표준화)은 2007년 25.3%에서 2019년 21.5%로 지난 12년 동안 3.8%p 감소되었음(남자는 45.1%에서 35.7%로 9.4%p 감소되었고, 여자는 5.3%에서 6.7%로 1.4%p 증가되었음). 2019년 기준 남자의 흡연율이 여자에 비해 5.3배 높았음(그림 1).

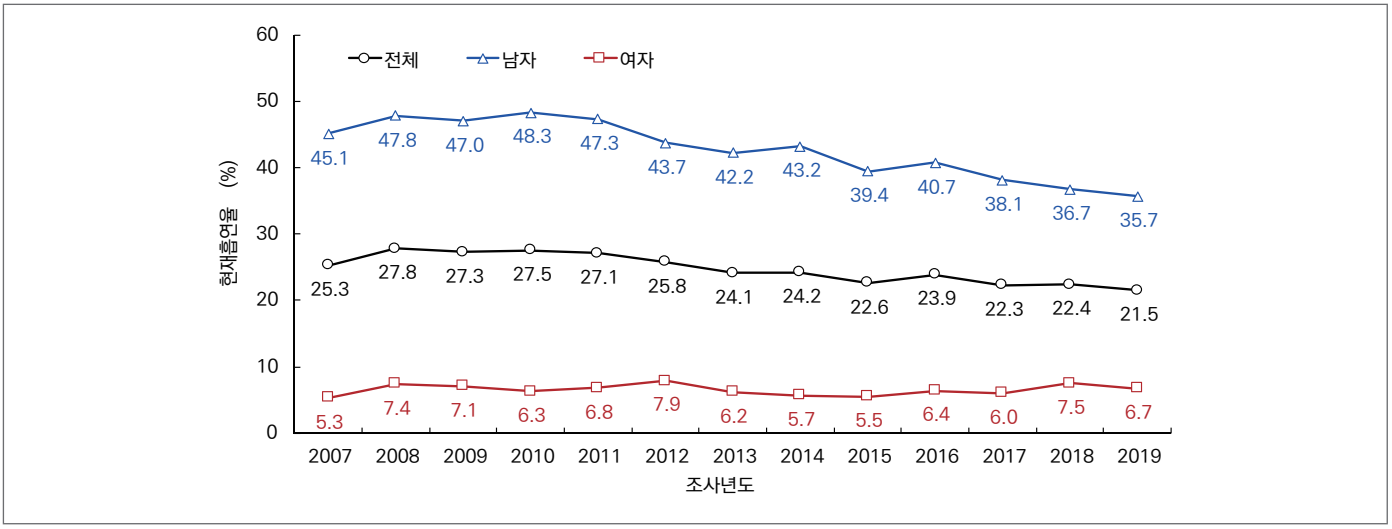


그림 1. 현재흡연율 추이, 2007~2019

* 현재흡연율 : 평생 담배 5갑(100개비) 이상 피웠고 현재 담배를 피우는 분율, 만 19세 이상

※ 연도별 지표값은 2005년 추계인구로 연령표준화

2. 현재흡연자의 금연시도 및 금연계획률 추이, 2007~2019

◈ 만 19세 이상 현재흡연자의 금연시도율(연령표준화)은 2007년 60.7%에서 2019년 53.8%로 6.9%p 감소하였으며, 1개월 내 금연계획률(연령표준화)은 2007년 20.2%에서 2019년 17.2%로 3.0%p 감소하였음. 2019년 기준 현재흡연자 10명 중 5.4명이 금연을 시도하였고, 1.7명이 향후 1개월 내 금연계획이 있다고 응답하였음(그림 2).

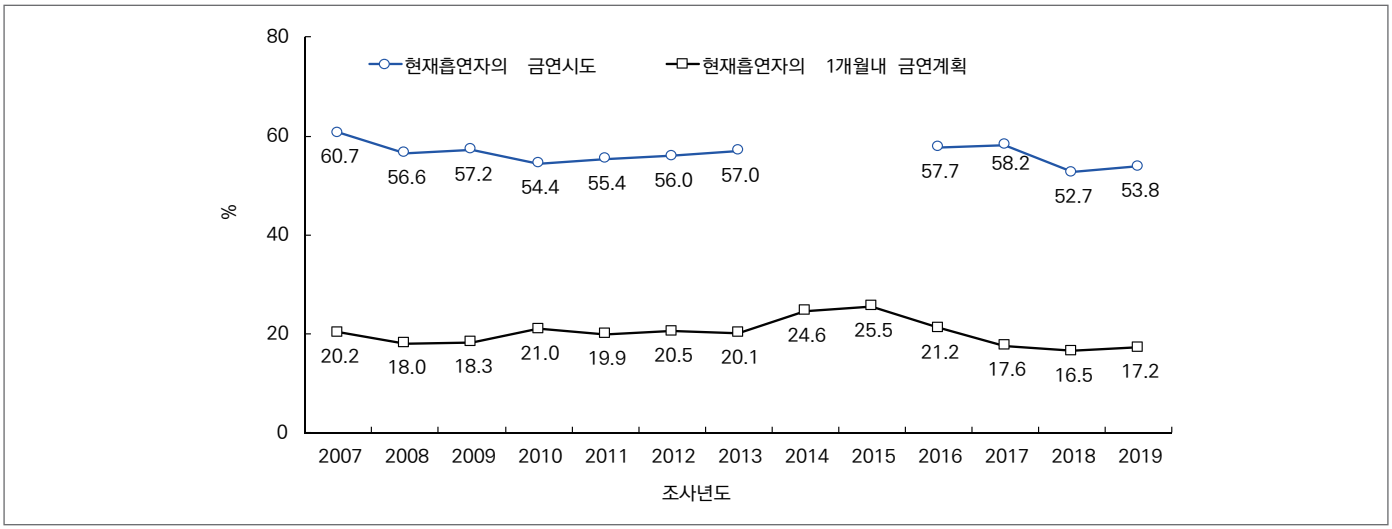


그림 2. 현재흡연자의 금연시도 및 금연계획률 추이, 2007~2019

* 현재흡연자의 금연시도율 : 현재흡연자 중 최근 1년 동안 담배를 끊고자 하루(24시간) 이상 금연을 시도한 분율
† 현재흡연자의 1개월 내 금연계획률 : 현재흡연자 중 1개월 내 금연할 계획이 있는 분율
※ 연도별 지표값은 2005년 추계인구로 연령표준화

출처 : 2019년 국민건강통계, http://knhanes.kdca.go.kr/
작성부서 : 질병관리청 만성질환관리국 만성질환관리과

Noncommunicable Disease (NCD) Statistics

1. Trend of current smoking rates among Korean adults aged 19 and over, 2007–2019

◈ For the past 12 years (2007–2019), the overall current smoking rate among Korean adults aged 19 and over fell by a decrease of 3.8 percentage points (%p), from 25.3% in 2007 to 21.5% in 2019: 45.1% to 35.7% among men (9.4%p decease) and 5.3% to 6.7% among women (1.4%p increase). In 2019, the current smoking rate of men stood at 35.7%, 5.3 times higher than 6.7% of women (Figure 1).

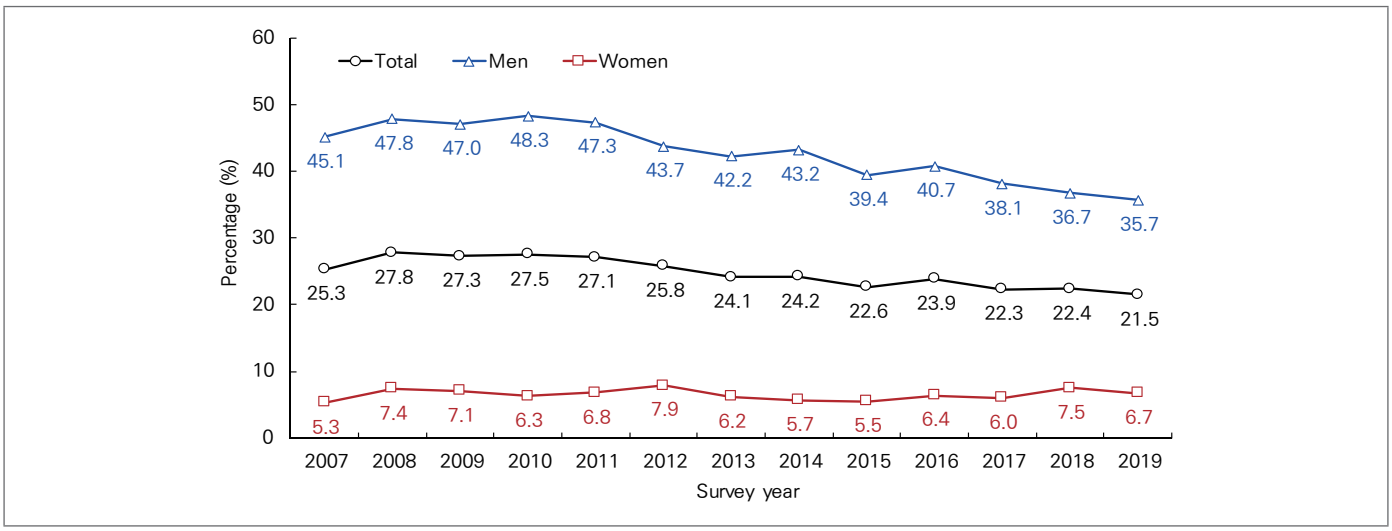


Figure 1. Current smoking rates among Korean adults (aged ≥ 19 years), 2007–2019

* Current smoking rate: percentage of people who have smoked more than 5 packets (100 cigarettes) in their lifetime and are currently smoking, among those aged 19 years and over

※ The mean was calculated using the direct standardization method based on a 2005 population projection.

2. Percentage of those who have attempted to stop smoking and have stop-smoking plan among current smokers aged ≥ 19 years, South Korea, 2007-2019

◈ The percentage of those who have attempted to stop smoking among current smokers aged 19 and over declined from 60.7% in 2007 to 53.8% in 2019 (a decrease of 6.9% percentage point [%p]). Meanwhile, the percentage of those planning to stop smoking within one month dropped from 20.2% in 2007 to 17.2% in 2019 (a decrease of 3.0%p). The 2019 data indicated that 5.4 out of 10 current smokers had attempted to stop smoking, and 1.7 responded that they had plan to stop within the next one month (Figure 2).

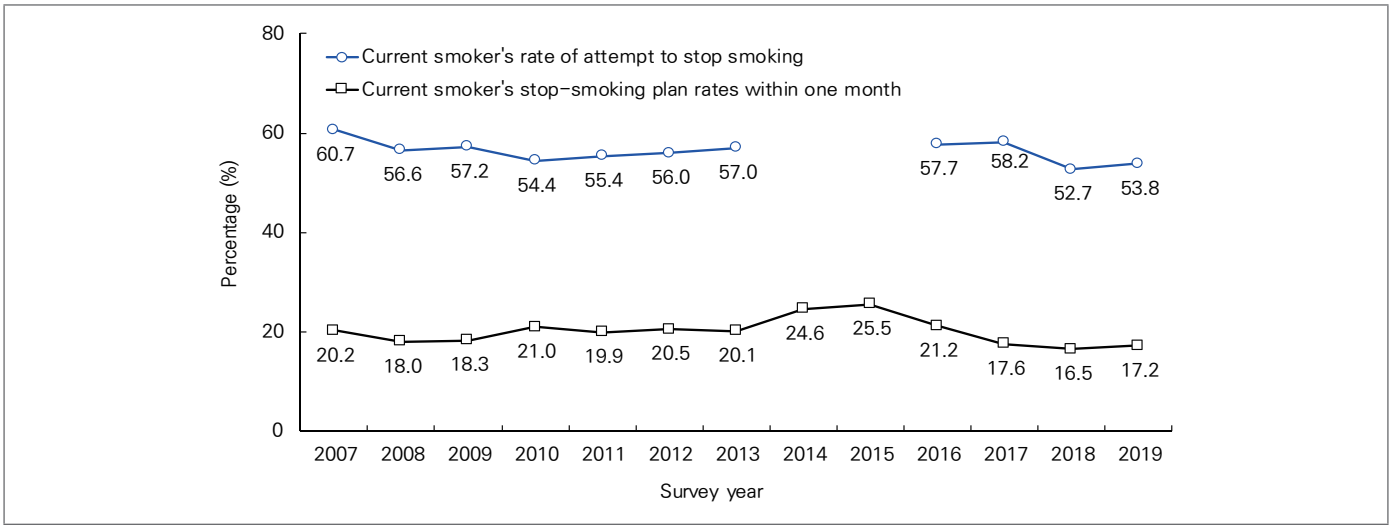


Figure 2. Percentage of those who have attempted to stop smoking and have stop-smoking plan among current smokers, 2007-2019

* Current smoker's rate of attempt to stop smoking: The percentage of current smokers who have attempted to stop smoking more than 24 hours per day in the past year

† Current smoker's stop-smoking plan rates within one month: The percentage of current smokers planning to stop smoking within one month

※ The mean was calculated using the direct standardization method based on a 2005 population projection.

Source: Korea Health Statistics 2019, Korea National Health and Nutrition Examination Survey, http://knhanes.kdca.go.kr/

Reported by: Division of Chronic Disease Control, Korea Disease Control and Prevention Agency

1.1 환자감시 : 전수감시 감염병 주간 발생 현황 (21주차)

표 1. 2021년 21주차 보고 현황(2021. 5. 22. 기준)*

단위 : 보고환자수†

감염병†	금주	2021년 누계	5년간 주별 평균§	연간현황					금주 해외유입현황 : 국가명(신고수)
				2020	2019	2018	2017	2016	
제2급감염병									
결핵	405	7,801	518	19,933	23,821	26,433	28,161	30,892	
수두	482	7,996	1,784	31,420	82,868	96,467	80,092	54,060	
홍역	0	0	1	6	194	15	7	18	
콜레라	0	0	0	0	1	2	5	4	
장티푸스	3	54	2	42	94	213	128	121	
파라티푸스	3	25	1	64	55	47	73	56	
세균성이질	0	11	1	30	151	191	112	113	
장출혈성대장균감염증	1	38	2	280	146	121	138	104	
A형간염	144	2,342	179	3,966	17,598	2,437	4,419	4,679	
백일해	0	10	5	123	496	980	318	129	
유행성이하선염	147	3,394	471	9,921	15,967	19,237	16,924	17,057	
풍진	0	0	0	0	8	0	7	11	
수막구균 감염증	0	0	0	5	16	14	17	6	
폐렴구균 감염증	3	94	12	344	526	670	523	441	
한센병	0	3	0	3	4				
성홍열	14	307	315	2,293	7,562	15,777	22,838	11,911	
반코마이신내성황색 포도알균(VRSA) 감염증	0	0	0	9	3	0	0	–	
카바페넴내성장내세균 속균종(CRE) 감염증	210	6,882	208	18,096	15,369	11,954	5,717	–	
E형간염	5	152	–	190	–	–	–	–	
제3급감염병									
파상풍	0	10	1	30	31	31	34	24	
B형간염	3	160	8	382	389	392	391	359	
일본뇌염	0	0	0	6	34	17	9	28	
C형간염	111	4,178	169	11,845	9,810	10,811	6,396	–	
말라리아	2	40	13	382	559	576	515	673	
레지오넬라증	5	122	5	366	501	305	198	128	
비브리오패혈증	0	1	0	70	42	47	46	56	
발진열	0	6	0	1	14	16	18	18	
쯔쯔가무시증	12	271	37	4,468	4,005	6,668	10,528	11,105	
렙토스피라증	1	41	1	124	138	118	103	117	
브루셀라증	0	2	0	8	1	5	6	4	
신증후군출혈열	4	73	6	268	399	433	531	575	
후천성면역결핍증(AIDS)	10	255	18	821	1,005	989	1,008	1,060	
크로이츠펠트–야콥병(CJD)	0	46	1	64	53	53	36	42	
뎅기열	0	0	2	43	273	159	171	313	
큐열	0	17	2	69	162	163	96	81	
라임병	0	0	0	16	23	23	31	27	
유비저	0	0	0	1	8	2	2	4	
치쿤구니야열	0	0	0	1	16	3	5	10	
중증열성혈소판감소 증후군(SFTS)	0	7	4	240	223	259	272	165	
지카바이러스감염증	0	0	0	1	3	3	11	16	

* 2020년 · 2021년 통계는 변동가능한 잠정통계이며, 2021년 누계는 1주부터 금주까지의 누계를 말함
† 각 감염병별로 규정된 신고범위(환자, 의사환자, 병원체보유자)의 모든 신고건을 포함함
† 미포함 질병: 에볼라바이러스병, 마버그열, 라싸열, 크리미안콩고출혈열, 남아메리카출혈열, 리프트밸리열, 두창, 페스트, 탄저, 보툴리눔독소증, 야토병, 신종감염병증후군, 중증급성호흡기증후군(SARS), 중동호흡기증후군(MERS), 동물인플루엔자 인체감염증, 신종인플루엔자, 디프테리아, 폴리오, b형헤모필루스인플루엔자, 발진티푸스, 공수병, 황열, 웨스트나일열, 진드기매개뇌염
§ 최근 5년(2016~2020년)의 해당 주의 신고 건수와 이전 2주, 이후 2주 동안의 신고 건수(총 25주) 평균임

표 2. 지역별 보고 현황(2021. 5. 22. 기준)(21주차)*

단위 : 보고환자수†

지역	제2급감염병											
	결핵			수두			홍역			콜레라		
	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†
전국	405	7,801	10,435	482	7,996	26,897	0	0	37	0	0	0
서울	59	1,254	1,881	45	1,057	2,969	0	0	5	0	0	0
부산	27	520	722	10	497	1,573	0	0	2	0	0	0
대구	22	377	497	18	391	1,379	0	0	2	0	0	0
인천	25	396	562	21	428	1,363	0	0	2	0	0	0
광주	7	176	266	17	289	944	0	0	0	0	0	0
대전	2	178	231	13	220	766	0	0	5	0	0	0
울산	7	139	214	13	149	749	0	0	0	0	0	0
세종	1	46	40	3	95	284	0	0	13	0	0	0
경기	82	1,732	2,222	156	2,262	7,471	0	0	0	0	0	0
강원	11	324	442	13	211	707	0	0	1	0	0	0
충북	19	268	326	21	238	705	0	0	0	0	0	0
충남	27	397	498	4	271	997	0	0	1	0	0	0
전북	20	326	419	19	325	1,076	0	0	1	0	0	0
전남	27	446	541	45	480	1,043	0	0	2	0	0	0
경북	27	591	752	25	374	1,511	0	0	2	0	0	0
경남	35	529	679	47	563	2,603	0	0	1	0	0	0
제주	7	102	144	12	146	757	0	0	0	0	0	0

* 2021년 통계는 변동가능한 잠정통계임
† 각 감염병별로 규정된 신고범위(환자, 의사환자, 병원체보유자)의 모든 신고건을 포함함
‡ 최근 5년(2016~2020년)의 1주부터 해당 주까지 누계의 평균임

표 2. *(계속)* **지역별 보고 현황(2021. 5. 22. 기준)(21주차)***

단위 : 보고환자수†

지역	제2급감염병											
	장티푸스			파라티푸스			세균성이질			장출혈성대장균감염증		
	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†
전국	3	54	62	3	25	18	0	11	46	1	38	23
서울	0	1	12	0	1	3	0	1	10	0	5	4
부산	0	8	6	0	6	2	0	1	3	0	0	1
대구	1	1	2	0	3	1	0	0	4	0	1	1
인천	0	1	5	0	0	1	0	0	3	0	1	1
광주	0	1	1	0	0	0	0	0	2	0	3	1
대전	0	3	2	0	0	1	0	0	1	0	1	1
울산	0	3	2	0	0	0	0	1	1	0	0	0
세종	0	0	1	0	0	0	0	0	0	0	1	0
경기	2	20	13	2	9	4	0	3	9	0	9	4
강원	0	0	2	0	0	0	0	0	1	0	1	1
충북	0	0	2	0	1	1	0	0	1	0	1	1
충남	0	1	3	0	0	1	0	0	2	0	1	1
전북	0	0	1	0	0	1	0	1	1	0	1	1
전남	0	1	1	1	2	1	0	3	3	0	2	3
경북	0	4	3	0	1	1	0	0	4	0	5	1
경남	0	10	5	0	2	1	0	0	1	1	4	1
제주	0	0	1	0	0	0	0	1	0	0	2	1

* 2021년 통계는 변동가능한 잠정통계임
† 각 감염병별로 규정된 신고범위(환자, 의사환자, 병원체보유자)의 모든 신고건을 포함함
‡ 최근 5년(2016~2020년)의 1주부터 해당 주까지 누계의 평균임

표 2. *(계속)* **지역별 보고 현황(2021. 5. 22. 기준)(21주차)***

단위 : 보고환자수†

지역	제2급감염병											
	A형간염			백일해			유행성이하선염			풍진		
	금주	2021년 누계	5년 누계 평균‡	금주	2021년 누계	5년 누계 평균‡	금주	2021년 누계	5년 누계 평균‡	금주	2021년 누계	5년 누계 평균‡
전국	144	2,342	2,550	0	10	121	147	3,394	6,180	0	0	1
서울	25	477	473	0	1	19	16	407	696	0	0	0
부산	0	35	97	0	0	6	2	199	371	0	0	0
대구	2	24	45	0	0	4	7	144	229	0	0	0
인천	17	180	185	0	0	10	8	165	292	0	0	0
광주	2	38	41	0	0	6	5	108	266	0	0	0
대전	1	56	246	0	0	4	2	104	175	0	0	0
울산	0	12	20	0	0	2	11	106	201	0	0	0
세종	0	12	37	0	0	3	3	35	34	0	0	0
경기	69	978	753	0	3	19	55	979	1,666	0	0	1
강원	1	37	48	0	0	1	4	128	213	0	0	0
충북	4	93	114	0	1	3	5	72	156	0	0	0
충남	3	154	198	0	0	3	5	155	271	0	0	0
전북	5	74	94	0	0	4	8	152	282	0	0	0
전남	4	60	64	0	0	10	4	155	263	0	0	0
경북	0	42	53	0	4	10	5	166	317	0	0	0
경남	0	19	69	0	1	15	6	248	665	0	0	0
제주	11	51	13	0	0	2	1	71	83	0	0	0

* 2021년 통계는 변동가능한 잠정통계임
† 각 감염병별로 규정된 신고범위(환자, 의사환자, 병원체보유자)의 모든 신고건을 포함함
‡ 최근 5년(2016~2020년)의 1주부터 해당 주까지 누계의 평균임

표 2. *(계속)* **지역별 보고 현황(2021. 5. 22. 기준)(21주차)***

단위 : 보고환자수†

지역	제2급감염병						제3급감염병					
	수막구균 감염증			성홍열			파상풍			B형간염		
	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†
전국	0	0	6	14	307	5,635	0	10	8	3	160	142
서울	0	0	1	3	41	780	0	2	1	0	17	25
부산	0	0	0	0	18	424	0	0	0	1	8	10
대구	0	0	0	1	4	186	0	2	1	0	4	4
인천	0	0	1	0	10	265	0	0	0	0	10	9
광주	0	0	0	2	43	277	0	0	0	0	7	3
대전	0	0	0	0	3	197	0	1	1	0	2	5
울산	0	0	0	0	14	262	0	0	0	0	3	4
세종	0	0	0	0	1	30	0	0	0	0	3	0
경기	0	0	2	4	82	1,586	0	2	1	1	52	35
강원	0	0	1	0	5	80	0	0	0	0	4	4
충북	0	0	0	2	9	99	0	1	0	0	2	4
충남	0	0	0	0	10	249	0	1	1	0	13	7
전북	0	0	0	0	6	206	0	0	0	0	5	7
전남	0	0	0	0	16	216	0	0	1	0	8	7
경북	0	0	0	0	10	288	0	1	1	0	8	7
경남	0	0	1	1	27	419	0	0	1	1	11	10
제주	0	0	0	1	8	71	0	0	0	0	3	1

* 2021년 통계는 변동가능한 잠정통계임
† 각 감염병별로 규정된 신고범위(환자, 의사환자, 병원체보유자)의 모든 신고건을 포함함
‡ 최근 5년(2016~2020년)의 1주부터 해당 주까지 누계의 평균임

표 2. *(계속)* **지역별 보고 현황(2021. 5. 22. 기준)(21주차)***

단위 : 보고환자수†

지역	제3급감염병											
	일본뇌염			말라리아			레지오넬라증			비브리오패혈증		
	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†
전국	0	0	0	2	40	62	5	122	97	0	1	1
서울	0	0	0	1	6	12	1	25	28	0	0	0
부산	0	0	0	0	1	1	0	2	6	0	0	0
대구	0	0	0	0	0	1	0	6	4	0	0	0
인천	0	0	0	0	9	7	0	3	7	0	0	0
광주	0	0	0	0	0	1	1	4	1	0	0	0
대전	0	0	0	0	0	1	0	1	1	0	0	0
울산	0	0	0	0	1	0	0	3	1	0	0	0
세종	0	0	0	0	0	0	0	0	0	0	0	0
경기	0	0	0	1	21	32	1	19	22	0	1	1
강원	0	0	0	0	1	3	0	3	3	0	0	0
충북	0	0	0	0	0	1	0	2	3	0	0	0
충남	0	0	0	0	1	1	0	2	3	0	0	0
전북	0	0	0	0	0	0	0	12	3	0	0	0
전남	0	0	0	0	0	0	0	10	3	0	0	0
경북	0	0	0	0	0	1	0	3	7	0	0	0
경남	0	0	0	0	0	1	1	8	3	0	0	0
제주	0	0	0	0	0	0	1	19	2	0	0	0

* 2021년 통계는 변동가능한 잠정통계임
† 각 감염병별로 규정된 신고범위(환자, 의사환자, 병원체보유자)의 모든 신고건을 포함함
‡ 최근 5년(2016~2020년)의 1주부터 해당 주까지 누계의 평균임

표 2. *(계속)* **지역별 보고 현황(2021. 5. 22. 기준)(21주차)***

단위 : 보고환자수†

지역	제3급감염병											
	발진열			쯔쯔가무시증			렙토스피라증			브루셀라증		
	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†
전국	0	6	1	12	271	381	1	41	15	0	2	1
서울	0	0	0	0	9	18	0	0	1	0	0	1
부산	0	0	0	0	14	17	0	3	1	0	0	0
대구	0	0	0	0	11	3	0	1	0	0	0	0
인천	0	4	0	0	2	9	0	4	0	0	0	0
광주	0	0	0	1	7	8	0	1	1	0	0	0
대전	0	0	0	0	2	8	0	1	0	0	0	0
울산	0	0	0	0	3	9	0	0	0	0	0	0
세종	0	0	0	0	0	2	0	0	0	0	0	0
경기	0	1	0	1	15	33	0	3	3	0	2	0
강원	0	0	0	0	3	9	0	7	1	0	0	0
충북	0	0	0	0	3	8	1	8	1	0	0	0
충남	0	0	1	1	17	37	0	5	2	0	0	0
전북	0	0	0	3	72	37	0	5	1	0	0	0
전남	0	0	0	4	66	94	0	1	2	0	0	0
경북	0	0	0	0	7	23	0	2	1	0	0	0
경남	0	0	0	2	34	59	0	0	1	0	0	0
제주	0	1	0	0	6	7	0	0	0	0	0	0

* 2021년 통계는 변동가능한 잠정통계임
† 각 감염병별로 규정된 신고범위(환자, 의사환자, 병원체보유자)의 모든 신고건을 포함함
‡ 최근 5년(2016~2020년)의 1주부터 해당 주까지 누계의 평균임

표 2. *(계속)* **지역별 보고 현황(2021. 5. 22. 기준)(21주차)***

단위 : 보고환자수†

지역	제3급감염병											
	신증후군출혈열			크로이츠펠트-야콥병(CJD)			뎅기열			큐열		
	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†	금주	2021년 누계	5년 누계 평균†
전국	4	73	90	0	46	17	0	0	63	0	17	39
서울	0	1	5	0	5	5	0	0	19	0	1	2
부산	0	0	2	0	6	1	0	0	4	0	1	1
대구	0	4	1	0	4	1	0	0	4	0	0	1
인천	0	1	2	0	3	0	0	0	3	0	0	1
광주	0	2	1	0	1	0	0	0	1	0	0	1
대전	0	0	1	0	1	0	0	0	0	0	2	1
울산	0	0	0	0	0	0	0	0	2	0	0	1
세종	0	0	0	0	0	0	0	0	0	0	0	0
경기	0	9	25	0	13	4	0	0	19	0	2	6
강원	0	3	4	0	3	1	0	0	2	0	0	0
충북	0	1	5	0	0	0	0	0	1	0	2	7
충남	0	11	9	0	2	1	0	0	2	0	5	5
전북	3	25	8	0	2	1	0	0	1	0	1	3
전남	1	10	12	0	1	0	0	0	1	0	1	5
경북	0	4	10	0	1	2	0	0	1	0	1	2
경남	0	2	4	0	3	1	0	0	2	0	1	3
제주	0	0	1	0	1	0	0	0	1	0	0	0

* 2021년 통계는 변동가능한 잠정통계임
† 각 감염병별로 규정된 신고범위(환자, 의사환자, 병원체보유자)의 모든 신고건을 포함함
‡ 최근 5년(2016~2020년)의 1주부터 해당 주까지 누계의 평균임

표 2. *(계속)* **지역별 보고 현황(2021. 5. 22. 기준)(21주차)***

단위 : 보고환자수†

지역	제3급감염병								
	라임병			중증열성혈소판감소증후군(SFTS)			지카바이러스감염증		
	금주	2021년 누계	5년 누계 평균‡	금주	2021년 누계	5년 누계 평균‡	금주	2021년 누계	5년 누계 평균‡
전국	0	0	4	0	7	12	0	0	–
서울	0	0	2	0	0	0	0	0	–
부산	0	0	0	0	0	0	0	0	–
대구	0	0	0	0	0	0	0	0	–
인천	0	0	0	0	0	0	0	0	–
광주	0	0	0	0	0	0	0	0	–
대전	0	0	0	0	0	0	0	0	–
울산	0	0	0	0	0	0	0	0	–
세종	0	0	0	0	0	0	0	0	–
경기	0	0	1	0	0	1	0	0	–
강원	0	0	0	0	0	1	0	0	–
충북	0	0	0	0	0	0	0	0	–
충남	0	0	0	0	0	2	0	0	–
전북	0	0	0	0	1	1	0	0	–
전남	0	0	0	0	1	1	0	0	–
경북	0	0	1	0	1	2	0	0	–
경남	0	0	0	0	2	2	0	0	–
제주	0	0	0	0	2	2	0	0	–

* 2021년 통계는 변동가능한 잠정통계임
† 각 감염병별로 규정된 신고범위(환자, 의사환자, 병원체보유자)의 모든 신고건을 포함함
‡ 최근 5년(2016~2020년)의 1주부터 해당 주까지 누계의 평균임

1.2 환자감시 : 표본감시 감염병 주간 발생 현황 (21주차)

1. 인플루엔자 주간 발생 현황(21주차, 2021. 5. 22. 기준)

- 2021년도 제21주 인플루엔자 표본감시(전국 200개 표본감시기관) 결과, 의사환자분율은 외래환자 1,000명당 1.7명으로 지난주(2.3명) 대비 감소

※ 2020-2021절기 유행기준은 5.8명(/1,000)

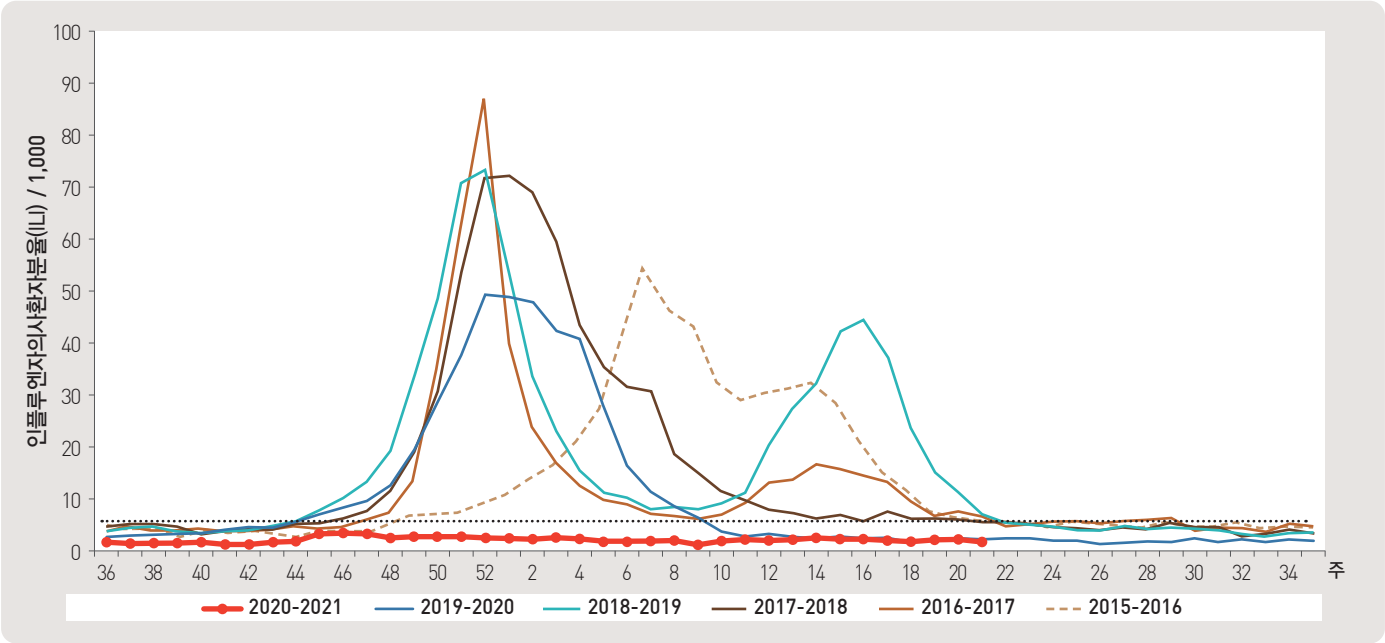


그림 1. 외래 환자 1,000명당 인플루엔자 의사환자 발생 현황

2. 수족구 발생 주간 현황(21주차, 2021. 5. 22. 기준)

- 2021년도 제21주차 수족구병 표본감시(전국 97개 의료기관) 결과, 의사환자 분율은 외래환자 1,000명당 0.8명으로 전주 0.2명 대비 증가

※ 수족구병은 2009년 6월 법정감염병으로 지정되어 표본감시체계로 운영

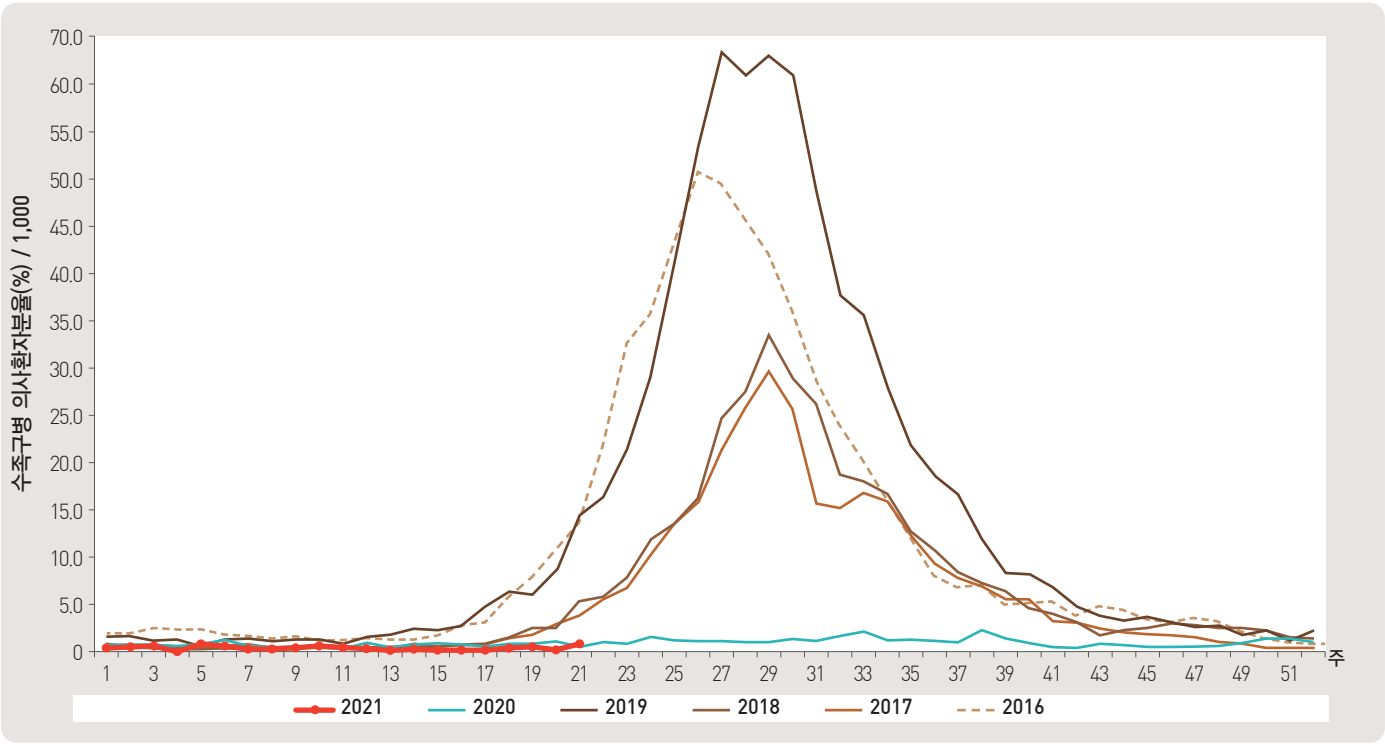


그림 2. 외래 환자 1,000명당 수족구 발생 현황

▶ 자세히 보기 : 질병관리청 → 간행물·통계 → 감염병발생정보 → 표본감시주간소식지

3. 안과 감염병 주간 발생 현황(21주차, 2021. 5. 22. 기준)

- 2021년도 제21주차 유행성각결막염 표본감시(전국 90개 의료기관) 결과, 외래환자 1,000명당 분율은 5.2명으로 전주 4.9명 대비 증가
- 동기간 급성출혈성결막염의 환자 분율은 0.5명으로 전주 0.4명 대비 증가

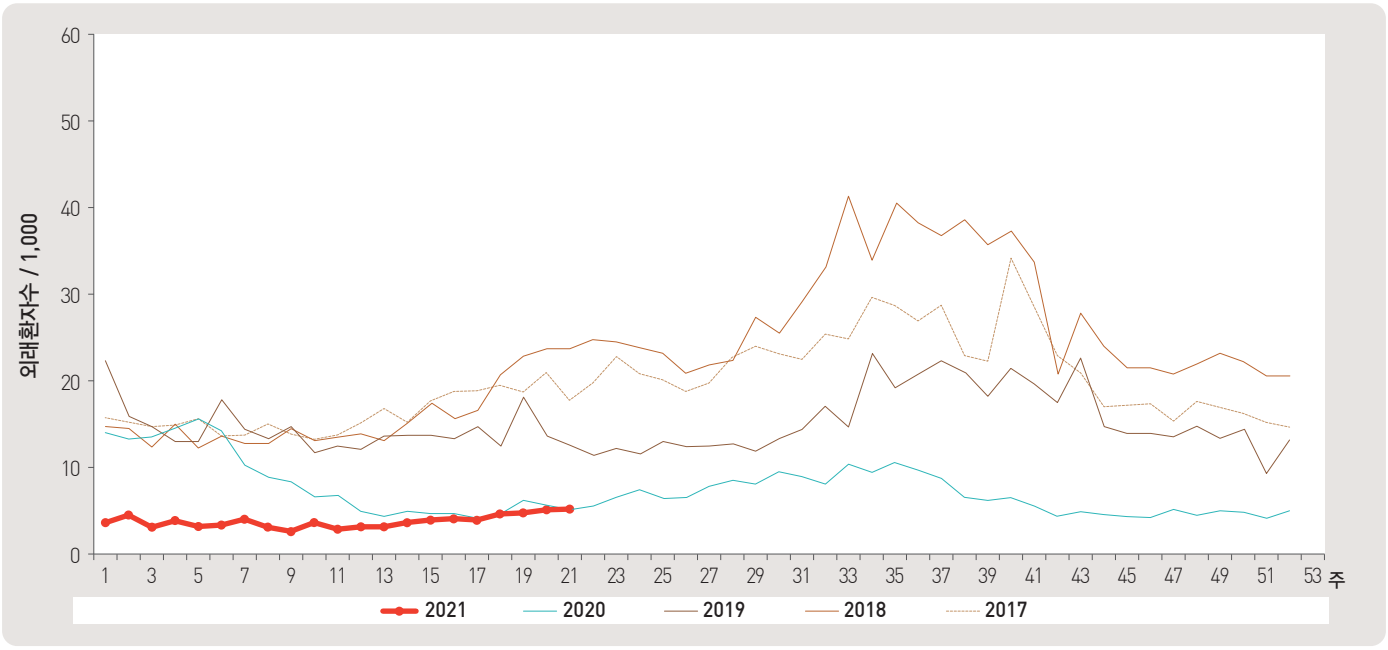


그림 3. 외래 환자 1,000명당 유행성각결막염 발생 현황

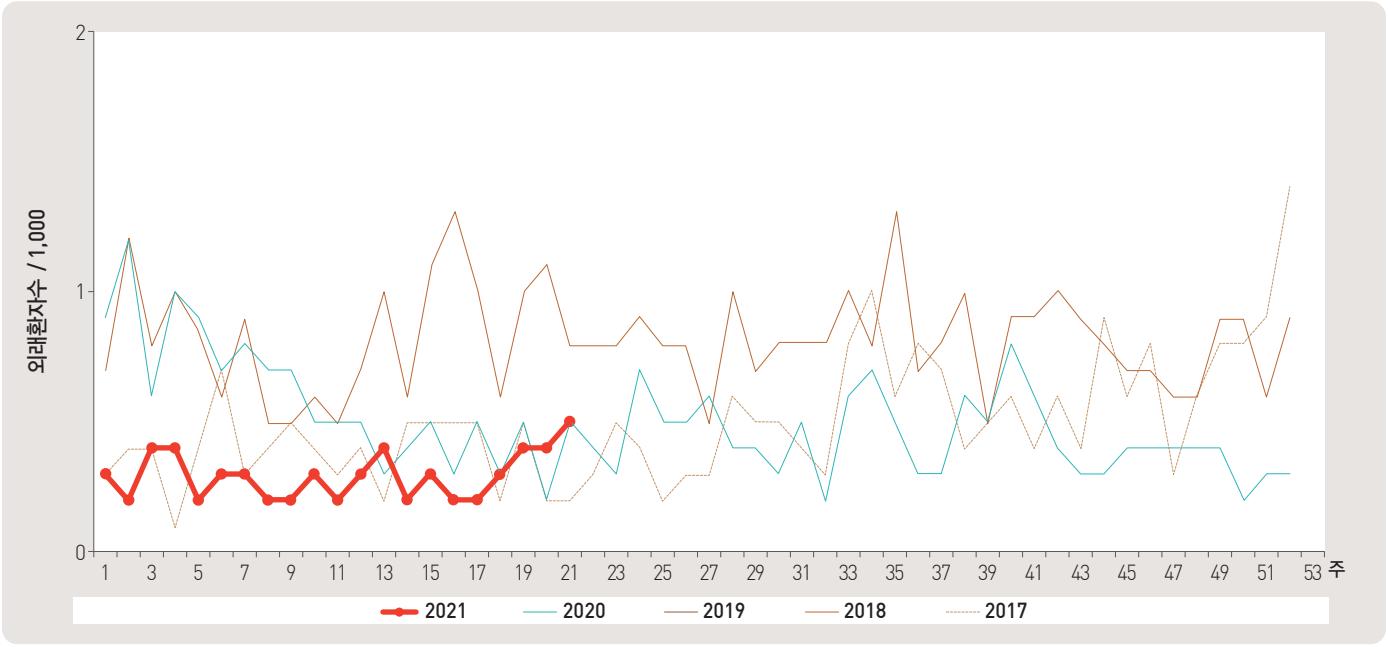


그림 4. 외래 환자 1,000명당 급성출혈성결막염 발생 현황

4. 성매개감염병 주간 발생 현황(21주차, 2021. 5. 22. 기준)

- 2021년도 제21주 성매개감염병 표본감시기관(전국 보건소 및 의료기관 588개 참여)에서 신고기관 당 사람유두종바이러스 감염증 4.1건, 성기단순포진 2.5건, 첨규콘딜롬 2.2건, 1기 매독 1.5건, 클라미디아감염증 1.4건, 임질 1.3건, 2기 매독 0.0건, 선천성 매독 0.0건을 신고함.

* 제21주차 신고의료기관 수: 임질 12개, 클라미디아감염증 31개, 성기단순포진 35개, 첨규콘딜롬 19개, 사람유두종바이러스 감염증 28개, 1기 매독 2개, 2기 매독 0개, 선천성 매독 0개
** 2020.1.1.일부터 사람유두종바이러스 감염증이 표본감시에 신설되었으며, 매독이 전수감시에서 표본감시로 변경됨

단위 : 신고수/신고기관 수

임질			클라미디아 감염증			성기단순포진			첨규콘딜롬		
금주	2020년 누적	최근 5년 누적 평균§	금주	2020년 누적	최근 5년 누적 평균§	금주	2020년 누적	최근 5년 누적 평균§	금주	2020년 누적	최근 5년 누적 평균§
1.3	4.1	5.1	1.4	11.7	14.9	2.5	18.8	19.2	2.2	11.1	11.3

사람유두종바이러스감염증			매독								
			1기			2기			선천성		
금주	2020년 누적	최근 5년 누적 평균§	금주	2020년 누적	최근 5년 누적 평균§	금주	2020년 누적	최근 5년 누적 평균§	금주	2020년 누적	최근 5년 누적 평균§
4.1	43.1	6.8	1.5	1.8	0.3	0.0	1.7	0.4	0.0	1.0	0.2

누계 : 매년 첫 주부터 금주까지의 보고 누계
† 각 질병별로 규정된 신고 범위(환자, 의사환자, 병원체보유자)의 모든 신고 건을 포함
§ 최근 5년('16–'20) 누적 평균(Cum. 5-year average) : 최근 5년 1주차부터 금주까지 누적 환자 수 평균

1.3 수인성 및 식품매개 감염병 집단발생 주간 현황 (21주차)

▣ 수인성 및 식품매개 감염병 집단발생 주간 현황(21주차, 2021. 5. 22. 기준)

- 2021년도 제21주에 집단발생이 14건(사례수 192명)이 발생하였으며 누적발생건수는 213건(사례수 3,032명)이 발생함.

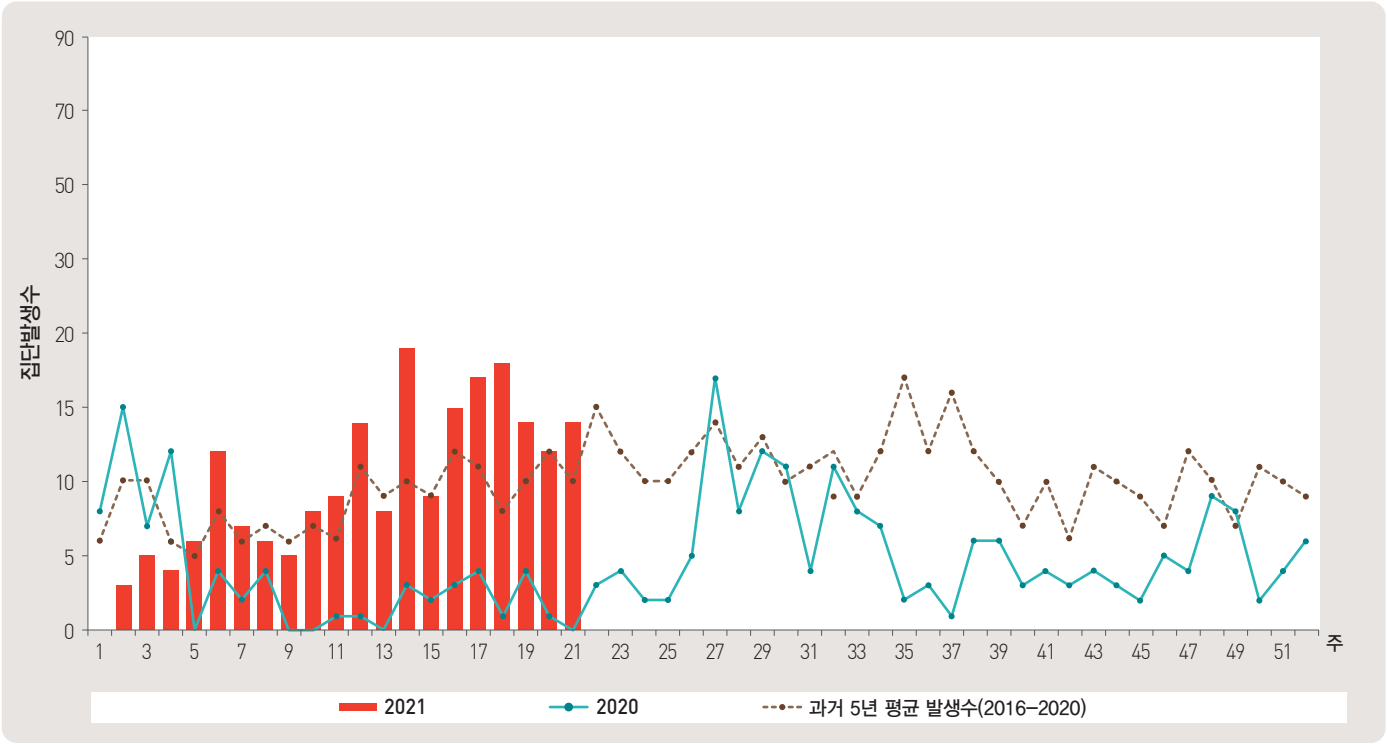


그림 5. 수인성 및 식품매개 감염병 집단발생 현황

2.1 병원체감시 : 인플루엔자 및 호흡기바이러스 주간 감시 현황(21주차)

1. 인플루엔자 바이러스 주간 현황(21주차, 2021. 5. 22. 기준)

- 2021년도 제21주에 전국 52개 감시사업 참여의료기관에서 의뢰된 호흡기검체 74건 중 양성 없음.

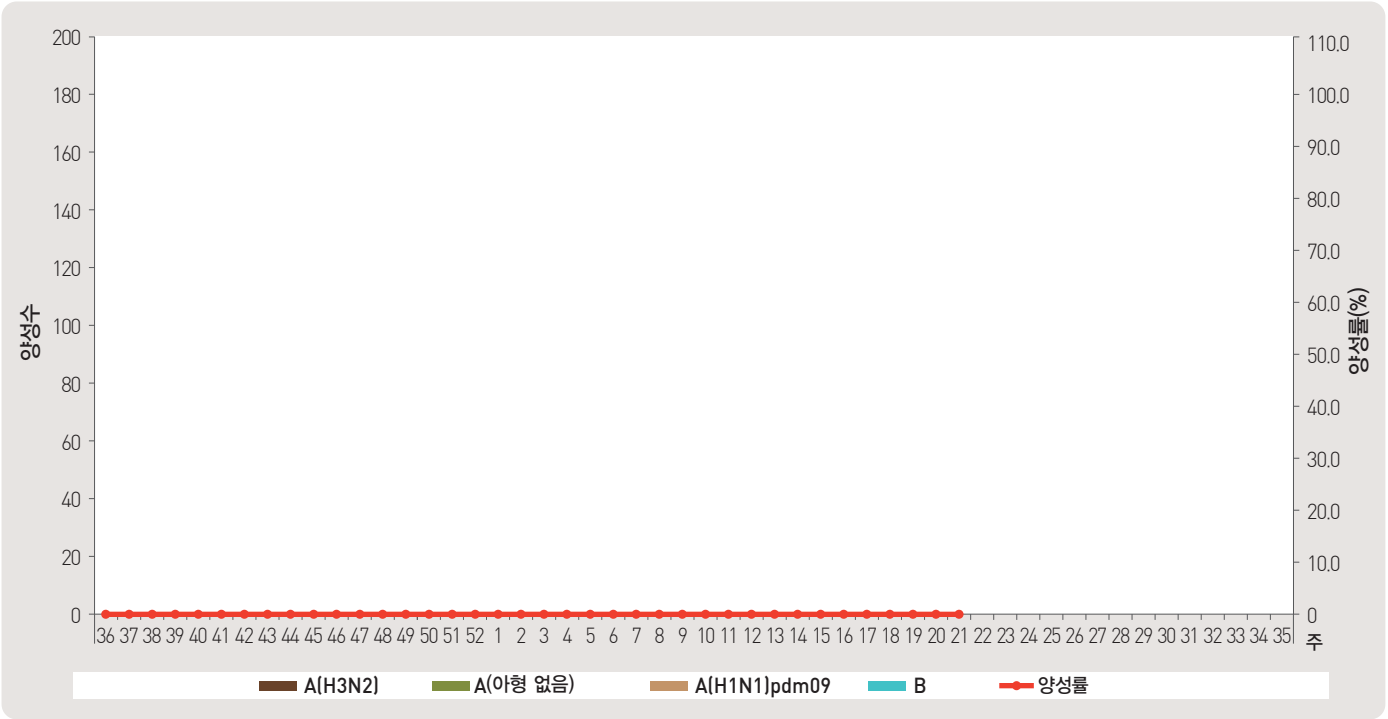


그림 6. 인플루엔자 바이러스 검출 현황

2. 호흡기 바이러스 주간 현황(21주차, 2021. 5. 22. 기준)

- 2021년도 제21주 호흡기 검체에 대한 유전자 검사결과 86.5%의 호흡기 바이러스가 검출되었음.
  (최근 4주 평균 87개의 호흡기 검체에 대한 유전자 검사결과를 나타내고 있음)

※ 주별통계는 잠정통계이므로 변동가능

2021 (주)	주별		검출률 (%)							
	검체 건수	검출률 (%)	아데노 바이러스	파라 인플루엔자 바이러스	호흡기 세포융합 바이러스	인플루엔자 바이러스	코로나 바이러스	리노 바이러스	보카 바이러스	메타뉴모 바이러스
18	93	71.0	7.5	0.0	0.0	0.0	1.1	43.0	19.4	0.0
19	67	67.2	9.0	0.0	0.0	0.0	1.5	41.8	14.9	0.0
20	115	71.3	4.3	0.0	0.0	0.0	0.9	47.8	18.3	0.0
21	74	86.5	13.5	0.0	0.0	0.0	1.4	44.6	27.0	0.0
4주 누적※	349	73.6	8.0	0.0	0.0	0.0	1.1	44.7	19.8	0.0
2020년 누적∀	5,819	48.6	6.5	0.4	3.1	12.0	3.4	18.4	3.5	1.4

※ 4주 누적 : 2021년 4월 25일 – 2021년 5월 22일 검출률임 (지난 4주간 평균 87개의 검체에서 검출된 수의 평균).
∀ 2020년 누적 : 2019년 12월 29일 – 2020년 12월 26일 검출률임.

▶ 자세히 보기 : 질병관리청 → 간행물·통계 → 감염병발생정보 → 표본감시주간소식지

2.2 병원체감시 : 급성설사질환 바이러스 및 세균 주간 감시 현황 (20주차)

▣ 급성설사질환 바이러스 및 세균 주간 검출 현황(20주차, 2021. 5. 15. 기준)

- 2021년도 제20주 실험실 표본감시(17개 시·도 보건환경연구원 및 70개 의료기관) 급성설사질환 원인 바이러스 검출 건수는 23건(47.9%), 세균 검출 건수는 11건(8.2%) 이었음.

◆ 급성설사질환 바이러스

주		검체수	검출 건수(검출률, %)					
			노로바이러스	그룹 A 로타바이러스	장내 아데노바이러스	아스트로바이러스	사포바이러스	합계
2021	17	75	17(22.7)	0(0.0)	1(1.3)	6(8.0)	0(0.0)	24(32.0)
	18	73	19(26.0)	0(0.0)	0(0.0)	16(21.9)	0(0.0)	35(47.9)
	19	68	19(27.9)	0(0.0)	1(1.5)	9(13.2)	0(0.0)	29(42.6)
	20	48	17(35.4)	0(0.0)	1(2.1)	5(10.4)	0(0.0)	23(47.9)
2021년 누적		1,397	456(32.6)	21(1.5)	13(0.9)	67(4.8)	2(0.1)	559(40.0)

* 검체는 5세 이하 아동의 급성설사 질환자에게서 수집됨.

◆ 급성설사질환 세균

주		검체수	분리 건수(분리율, %)								
			살모넬라균	병원성 대장균	세균성 이질균	장염 비브리오균	비브리오 콜레라균	캄필로 박터균	클라스트리듐 퍼프린젠스	황색 포도알균	바실루스 세레우스균	합계
2021	17	184	5 (2.7)	6 (3.3)	1 (0.5)	0 (0.0)	0 (0.0)	3 (1.6)	3 (1.6)	6 (3.3)	4 (2.2)	24 (12.6)
	18	189	6 (3.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (1.6)	8 (4.2)	11 (5.8)	1 (0.5)	29 (15.8)
	19	179	3 (1.7)	2 (1.1)	0 (0.0)	0 (0.0)	0 (0.0)	4 (2.2)	5 (2.8)	1 (0.6)	1 (0.6)	29 (15.9)
	20	134	1 (0.7)	3 (2.2)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.7)	2 (1.5)	4 (3.0)	0 (0.0)	11 (8.2)
2021년 누적		3,800	52 (1.4)	51 (1.3)	2 (0.1)	0 (0.0)	0 (0.0)	39 (1.0)	90 (2.4)	129 (3.4)	46 (1.2)	417 (11.0)

* 2020년 실험실 감시체계 참여기관(69개 의료기관)

▶ 자세히 보기 : 질병관리청 → 간행물·통계 → 감염병발생정보 → 표본감시주간소식지 → 감염병포털 → 실험실소식지

2.3 병원체감시 : 엔테로바이러스 주간 감시 현황 (20주차)

▣ 엔테로바이러스 주간 검출 현황(20주차, 2021. 5. 15. 기준)

- 2021년도 제20주 실험실 표본감시(17개 시·도 보건환경연구원, 전국 60개 참여병원) 결과, 엔테로바이러스 검출률 0.0%(0건 양성/1검체), 2021년 누적 양성률 1.1%(2건 양성/181검체)임.

  – 무균성수막염 0건(2021년 누적 1건), 수족구병 및 포진성구협염 0건(2021년 누적 0건), 합병증 동반 수족구 0건(2021년 누적 0건), 기타 0건(2021년 누적 0건)임.

◆ 무균성수막염

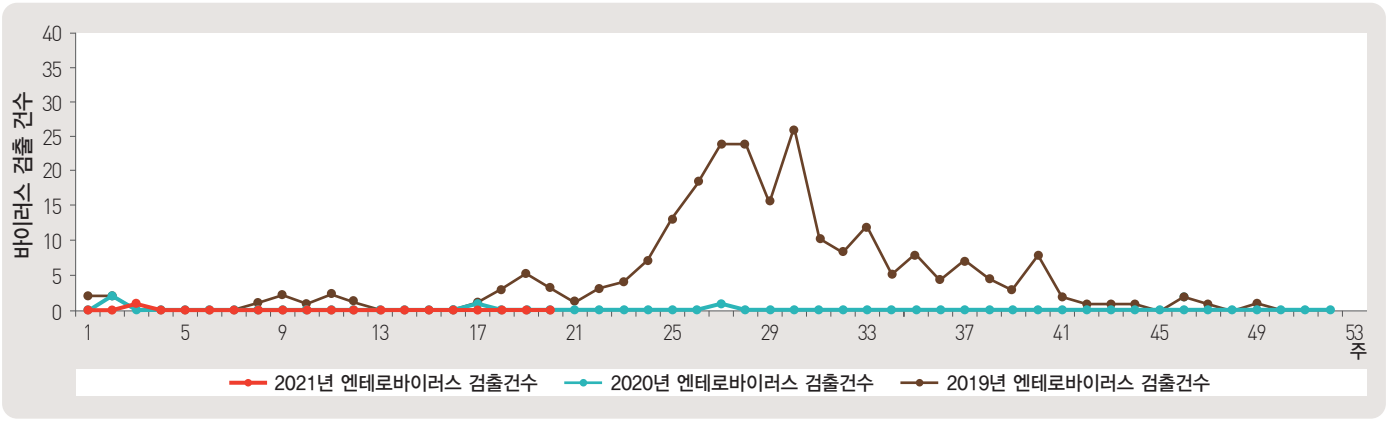


그림 7. 무균성수막염 바이러스 검출수

◆ 수족구병 및 포진성구협염

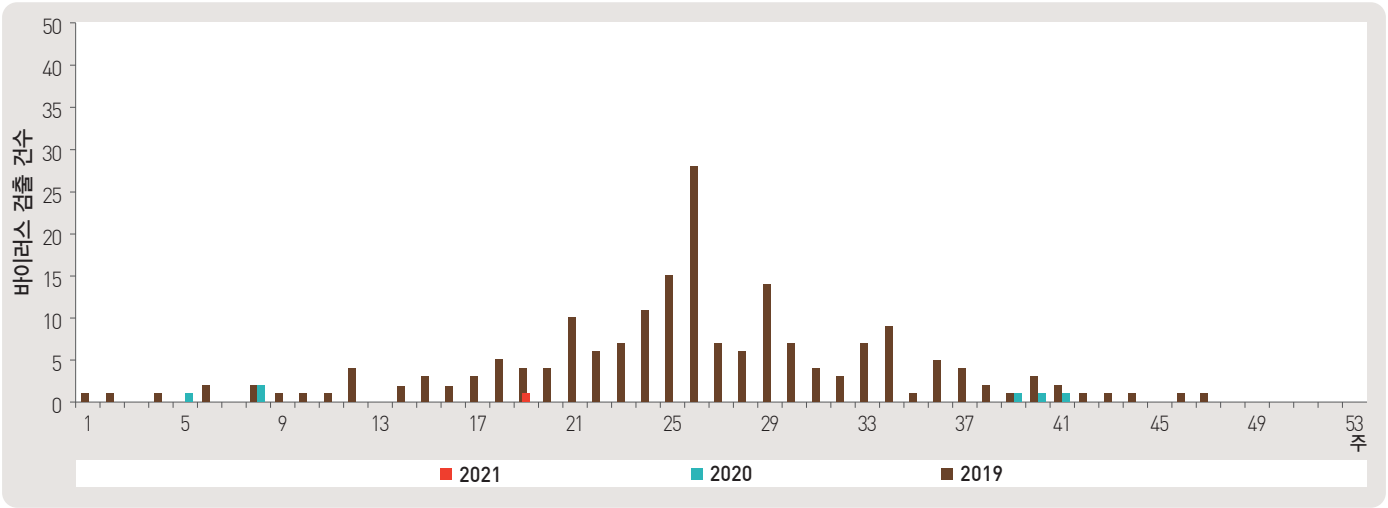


그림 8. 수족구 및 포진성구협염 바이러스 검출수

◆ 합병증 동반 수족구

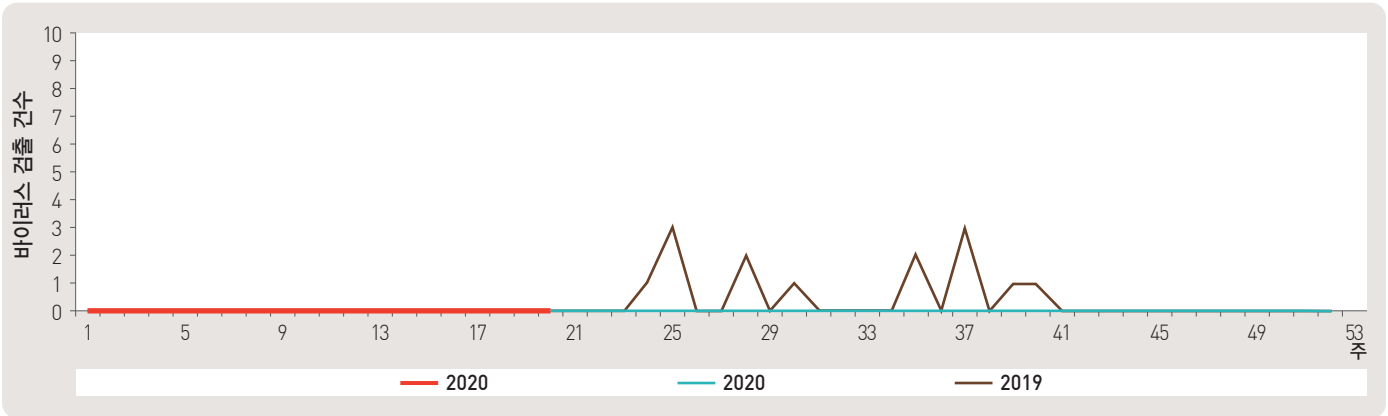


그림 9. 합병증 동반 수족구 바이러스 검출수

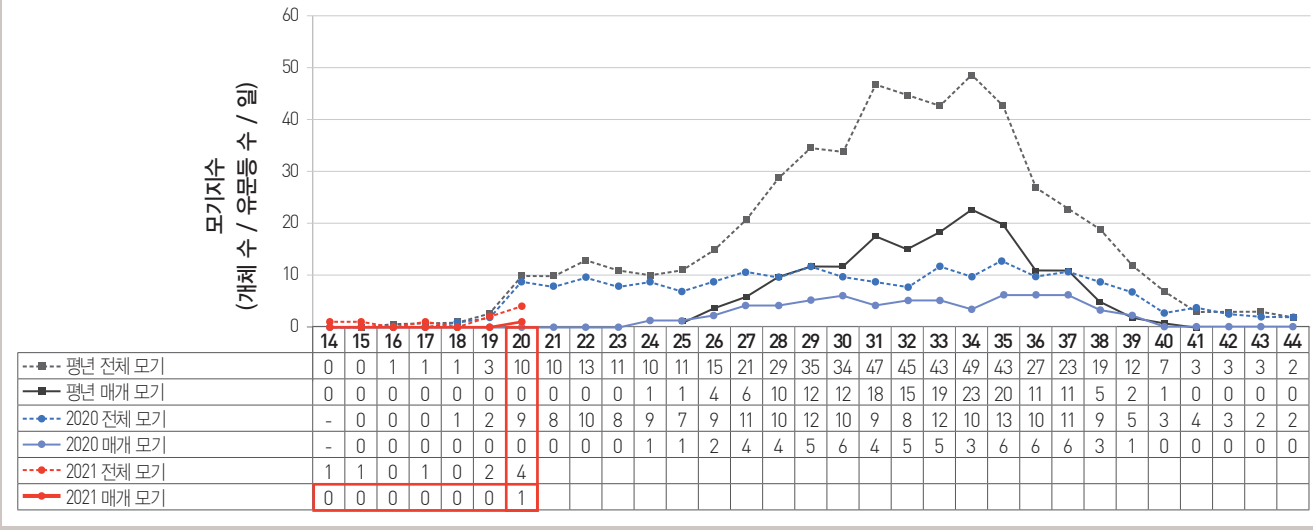
▶ 자세히 보기 : 질병관리청 → 간행물·통계 → 감염병발생정보 → 표본감시주간소식지 → 감염병포털 → 실험실소식지

3.1 매개체감시 / 말라리아 매개모기 주간 감시현황 (20주차)

▣ 말라리아 매개모기 주간 검출 현황(20주차, 2021. 5. 15. 기준)

- 2021년도 제20주 말라리아 매개모기 주간 발생현황(3개 시·도, 총 50개 채집지점)
  - 전체모기 : 평균 4개체로 평년 10개체 대비 6개체 감소 및 전년 9개체 대비 5개체 감소
  - 말라리아 매개모기 : 평균 1개체로 평년 0개체 대비 1개체 증가 및 전년 0개체 대비 1개체 증가

※ 모기수 산출법 : 1주일간 유문등에 채집된 모기의 평균수(개체수/트랩/일)
※ 2020년에는 보건소·보건환경연구원의 현안업무(코로나바이러스감염증-19) 대응으로 14주차 미채집



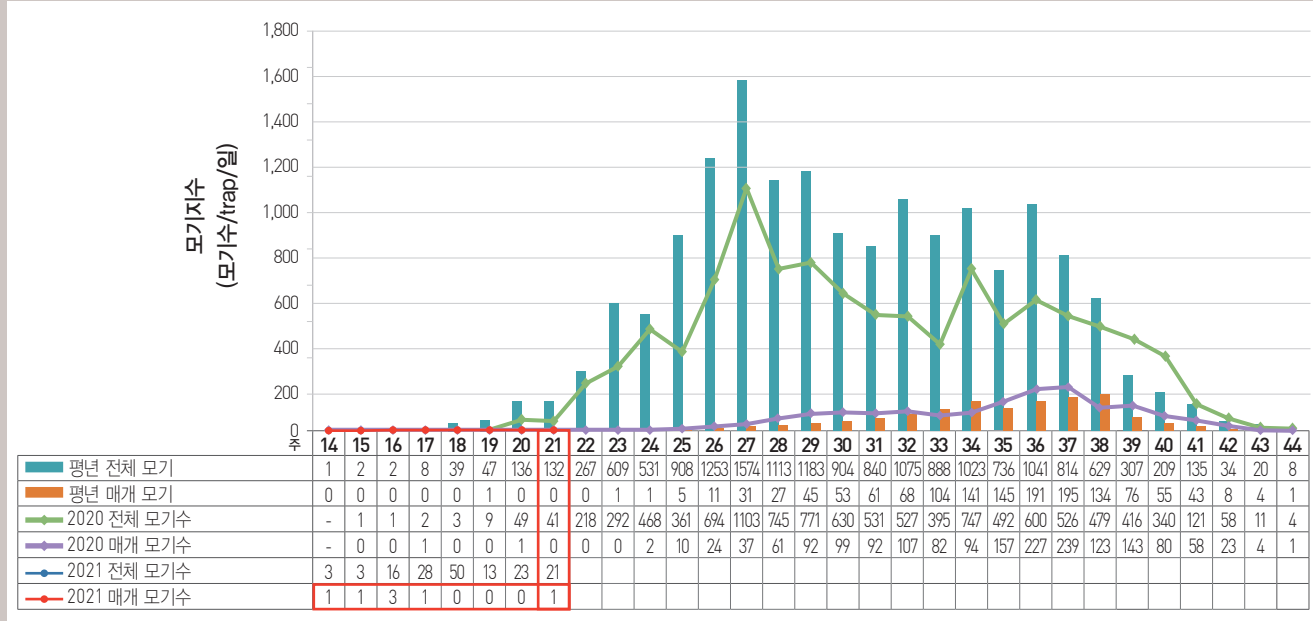
주	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
평년 전체 모기	0	0	1	1	1	3	10	10	13	11	10	11	15	21	29	35	34	47	45	43	49	43	27	23	19	12	7	3	3	3	2
평년 매개 모기	0	0	0	0	0	0	0	0	0	0	1	1	4	6	10	12	12	18	15	19	23	20	11	11	5	2	1	0	0	0	0
2020 전체 모기	-	0	0	0	1	2	9	8	10	8	9	7	9	11	10	12	10	9	8	12	10	13	10	11	9	5	3	4	3	2	2
2020 매개 모기	-	0	0	0	0	0	0	0	0	0	1	1	2	4	4	5	6	4	5	5	3	6	6	6	3	1	0	0	0	0	0
2021 전체 모기	1	1	0	1	0	2	4																								
2021 매개 모기	0	0	0	0	0	0	1																								

그림 10. 말라리아 매개모기 검출수

3.2 매개체감시 / 일본뇌염 매개모기 주간 발생 현황 (21주차)

▣ 일본뇌염 매개모기 주간 발생 현황 (21주차, 2021. 5. 22. 기준)

- 2021년 제21주 일본뇌염 매개모기 주간 발생현황 : 9개 시·도 보건환경연구원(총 9개 지점)
  - 전체모기 수 : 평균 21개체 [평년 132개체 대비 111개체 감소 및 전년 41개체 대비 20개체 감소]
  - 일본뇌염 매개모기 : 평균 1개체 [평년 0개체 대비 1개체 증가 및 전년 0개체 대비 1개체 증가]



주	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
평년 전체 모기	1	2	2	8	39	47	136	132	267	609	531	908	1253	1574	1113	1183	904	840	1075	888	1023	736	1041	814	629	307	209	135	34	20	8
평년 매개 모기	0	0	0	0	0	1	0	0	0	1	1	5	11	31	27	45	53	61	68	104	141	145	191	195	134	76	55	43	8	4	1
2020 전체 모기수	-	1	1	2	3	9	49	41	218	292	468	361	694	1103	745	771	630	531	527	395	747	492	600	526	479	416	340	121	58	11	4
2020 매개 모기수	-	0	0	1	0	0	1	0	0	0	2	10	24	37	61	92	99	92	107	82	94	157	227	239	123	143	80	58	23	4	1
2021 전체 모기수	3	3	16	28	50	13	23	21																							
2021 매개 모기수	1	1	3	1	0	0	0	1																							

그림 11. 일본뇌염 매개모기 주간 발생 현황

주요 통계 이해하기

〈통계표 1〉은 지난 5년간 발생한 법정감염병과 2021년 해당 주 발생현황을 비교한 표로, 금주 환자 수(Current week)는 2021년 해당 주의 신고건수를 나타내며, 2021년 누계 환자수(Cum. 2021)는 2021년 1주부터 해당 주까지의 누계 건수, 그리고 5년 주 평균 환자수(5-year weekly average)는 지난 5년(2016-2020년) 해당 주의 신고건수와 이전 2주, 이후 2주의 신고건수(총 25주) 평균으로 계산된다. 그러므로 금주 환자수(Current week)와 5년 주 평균 환자수(5-year weekly average)의 신고건수를 비교하면 해당 주 단위 시점과 예년의 신고 수준을 비교해 볼 수 있다. 연도별 환자수(Total no. of cases by year)는 지난 5년간 해당 감염병 현황을 나타내는 확정 통계이며 연도별 현황을 비교해 볼 수 있다.

예) 2021년 12주의 5년 주 평균 환자수(5-year weekly average)는 2016년부터 2020년의 11주부터 14주까지의 신고 건수를 총 25주로 나눈 값으로 구해진다.

* 5년 주 평균 환자수(5-year weekly average)=(X1 + X2 + … + X25)/25

	11주	11주	12주	13주	14주
2021년			해당 주		
2020년	X1	X2	X3	X4	X5
2019년	X6	X7	X8	X9	X10
2018년	X11	X12	X13	X14	X15
2017년	X16	X17	X18	X19	X20
2016년	X21	X22	X23	X24	X25

〈통계표 2〉는 17개 시·도 별로 구분한 법정감염병 보고 현황을 보여 주고 있으며, 각 감염병별로 최근 5년 누계 평균 환자수(Cum, 5-year average)와 2021년 누계 환자수(Cum, 2021)를 비교해 보면 최근까지의 누적 신고건수에 대한 이전 5년 동안 해당 주까지의 평균 신고건수와 비교가 가능하다. 최근 5년 누계 평균 환자수(Cum, 5-year average)는 지난 5년(2016-2020년) 동안의 동기간 신고 누계 평균으로 계산된다.

기타 표본감시 감염병에 대한 신고현황 그림과 통계는 최근 발생양상을 신속하게 파악하는데 도움이 된다.

Statistics of selected infectious diseases

Table 1. Reported cases of national infectious diseases in Republic of Korea, week ending May 22, 2021 (21st week)*

Unit: No. of cases†

Classification of disease ‡	Current week	Cum. 2021	5-year weekly average	Total no. of cases by year					Imported cases of current week : Country (no. of cases)
				2020	2019	2018	2017	2016	
Category Ⅱ									
Tuberculosis	405	7,801	518	19,933	23,821	26,433	28,161	30,892	
Varicella	482	7,996	1,784	31,420	82,868	96,467	80,092	54,060	
Measles	0	0	1	6	194	15	7	18	
Cholera	0	0	0	0	1	2	5	4	
Typhoid fever	3	54	2	42	94	213	128	121	
Paratyphoid fever	3	25	1	64	55	47	73	56	
Shigellosis	0	11	1	30	151	191	112	113	
EHEC	1	38	2	280	146	121	138	104	
Viral hepatitis A	144	2,342	179	3,966	17,598	2,437	4,419	4,679	
Pertussis	0	10	5	123	496	980	318	129	
Mumps	147	3,394	471	9,921	15,967	19,237	16,924	17,057	
Rubella	0	0	0	0	8	0	7	11	
Meningococcal disease	0	0	0	5	16	14	17	6	
Pneumococcal disease	3	94	12	344	526	670	523	441	
Hansen's disease	0	3	0	3	4				
Scarlet fever	14	307	315	2,293	7,562	15,777	22,838	11,911	
VRSA	0	0	0	9	3	0	0	-	
CRE	210	6,882	208	18,096	15,369	11,954	5,717	-	
Viral hepatitis E	5	152	-	190	-	-	-	-	
Category Ⅲ									
Tetanus	0	10	1	30	31	31	34	24	
Viral hepatitis B	3	160	8	382	389	392	391	359	
Japanese encephalitis	0	0	0	6	34	17	9	28	
Viral hepatitis C	111	4,178	169	11,845	9,810	10,811	6,396	-	
Malaria	2	40	13	382	559	576	515	673	
Legionellosis	5	122	5	366	501	305	198	128	
Vibrio vulnificus sepsis	0	1	0	70	42	47	46	56	
Murine typhus	0	6	0	1	14	16	18	18	
Scrub typhus	12	271	37	4,468	4,005	6,668	10,528	11,105	
Leptospirosis	1	41	1	124	138	118	103	117	
Brucellosis	0	2	0	8	1	5	6	4	
HFRS	4	73	6	268	399	433	531	575	
HIV/AIDS	10	255	18	821	1,005	989	1,008	1,060	
CJD	0	46	1	64	53	53	36	42	
Dengue fever	0	0	2	43	273	159	171	313	
Q fever	0	17	2	69	162	163	96	81	
Lyme Borreliosis	0	0	0	16	23	23	31	27	
Melioidosis	0	0	0	1	8	2	2	4	
Chikungunya fever	0	0	0	1	16	3	5	10	
SFTS	0	7	4	240	223	259	272	165	
Zika virus infection	0	0	0	1	3	3	11	16	

Abbreviation: EHEC= Enterohemorrhagic Escherichia coli, VRSA= Vancomycin-resistant Staphylococcus aureus, CRE= Carbapenem-resistant Enterobacteriaceae, HFRS= Hemorrhagic fever with renal syndrome, CJD= Creutzfeldt-Jacob Disease, SFTS= Severe fever with thrombocytopenia syndrome.
Cum: Cumulative counts from 1st week to current week in a year.
* The reported data for year 2020, 2021 are provisional but the data from 2016 to 2019 are finalized data.
† According to surveillance data, the reported cases may include all of the cases such as confirmed, suspected, and asymptomatic carrier in the group.
‡ The reported surveillance data excluded no incidence data such as Ebola virus disease, Marburg Hemorrhagic fever, Lassa fever, Crimean Congo Hemorrhagic fever, South American Hemorrhagic fever, Rift Valley fever, Smallpox, Plague, Anthrax, Botulism, Tularemia, Newly emerging infectious disease syndrome, Severe Acute Respiratory Syndrome, Middle East Respiratory Syndrome, Human infection with zoonotic influenza, Novel Influenza, Diphtheria, Poliomyelitis, Haemophilus influenza type b, Epidemic typhus, Rabies, Yellow fever, West Nile fever and Tick-borne Encephalitis.

Table 2. Reported cases of infectious diseases by geography, week ending May 22, 2021 (21st week)*

Unit: No. of cases†

Reporting area	Diseases of Category II											
	Tuberculosis			Varicella			Measles			Cholera		
	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§
Overall	405	7,801	10,435	482	7,996	26,897	0	0	37	0	0	0
Seoul	59	1,254	1,881	45	1,057	2,969	0	0	5	0	0	0
Busan	27	520	722	10	497	1,573	0	0	2	0	0	0
Daegu	22	377	497	18	391	1,379	0	0	2	0	0	0
Incheon	25	396	562	21	428	1,363	0	0	2	0	0	0
Gwangju	7	176	266	17	289	944	0	0	0	0	0	0
Daejeon	2	178	231	13	220	766	0	0	5	0	0	0
Ulsan	7	139	214	13	149	749	0	0	0	0	0	0
Sejong	1	46	40	3	95	284	0	0	13	0	0	0
Gyonggi	82	1,732	2,222	156	2,262	7,471	0	0	0	0	0	0
Gangwon	11	324	442	13	211	707	0	0	1	0	0	0
Chungbuk	19	268	326	21	238	705	0	0	0	0	0	0
Chungnam	27	397	498	4	271	997	0	0	1	0	0	0
Jeonbuk	20	326	419	19	325	1,076	0	0	1	0	0	0
Jeonnam	27	446	541	45	480	1,043	0	0	2	0	0	0
Gyeongbuk	27	591	752	25	374	1,511	0	0	2	0	0	0
Gyeongnam	35	529	679	47	563	2,603	0	0	1	0	0	0
Jeju	7	102	144	12	146	757	0	0	0	0	0	0

Cum: Cumulative counts from 1st week to current week in a year

* The reported data for year 2020, 2021 are provisional but the data from 2016 to 2019 are finalized data.

† According to surveillance data, the reported cases may include all of the cases such as confirmed, suspected, and asymptomatic carrier in the group.

§ Cum. 5-year average is mean value calculated by cumulative counts from 1st week to current week for 5 preceding years.

Table 2. *(Continued)* Reported cases of infectious diseases by geography, weeks ending May 22, 2021 (21st week)*

Unit: No. of cases†

Reporting area	Diseases of Category II											
	Typhoid fever			Paratyphoid fever			Shigellosis			Enterohemorrhagic *Escherichia coli*		
	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§
Overall	3	54	62	3	25	18	0	11	46	1	38	23
Seoul	0	1	12	0	1	3	0	1	10	0	5	4
Busan	0	8	6	0	6	2	0	1	3	0	0	1
Daegu	1	1	2	0	3	1	0	0	4	0	1	1
Incheon	0	1	5	0	0	1	0	0	3	0	1	1
Gwangju	0	1	1	0	0	0	0	0	2	0	3	1
Daejeon	0	3	2	0	0	1	0	0	1	0	1	1
Ulsan	0	3	2	0	0	0	0	1	1	0	0	0
Sejong	0	0	1	0	0	0	0	0	0	0	1	0
Gyonggi	2	20	13	2	9	4	0	3	9	0	9	4
Gangwon	0	0	2	0	0	0	0	0	1	0	1	1
Chungbuk	0	0	2	0	1	1	0	0	1	0	1	1
Chungnam	0	1	3	0	0	1	0	0	2	0	1	1
Jeonbuk	0	0	1	0	0	1	0	1	1	0	1	1
Jeonnam	0	1	1	1	2	1	0	3	3	0	2	3
Gyeongbuk	0	4	3	0	1	1	0	0	4	0	5	1
Gyeongnam	0	10	5	0	2	1	0	0	1	1	4	1
Jeju	0	0	1	0	0	0	0	1	0	0	2	1

Cum: Cumulative counts from 1st week to current week in a year

* The reported data for year 2020, 2021 are provisional but the data from 2016 to 2019 are finalized data.

† According to surveillance data, the reported cases may include all of the cases such as confirmed, suspected, and asymptomatic carrier in the group.

§ Cum. 5-year average is mean value calculated by cumulative counts from 1st week to current week for 5 preceding years.

Table 2. *(Continued)* Reported cases of infectious diseases by geography, weeks ending May 22, 2021 (21st week)*

Unit: No. of cases†

Reporting area	Diseases of Category II											
	Viral hepatitis A			Pertussis			Mumps			Rubella		
	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§
Overall	144	2,342	2,550	0	10	121	147	3,394	6,180	0	0	1
Seoul	25	477	473	0	1	19	16	407	696	0	0	0
Busan	0	35	97	0	0	6	2	199	371	0	0	0
Daegu	2	24	45	0	0	4	7	144	229	0	0	0
Incheon	17	180	185	0	0	10	8	165	292	0	0	0
Gwangju	2	38	41	0	0	6	5	108	266	0	0	0
Daejeon	1	56	246	0	0	4	2	104	175	0	0	0
Ulsan	0	12	20	0	0	2	11	106	201	0	0	0
Sejong	0	12	37	0	0	3	3	35	34	0	0	0
Gyonggi	69	978	753	0	3	19	55	979	1,666	0	0	1
Gangwon	1	37	48	0	0	1	4	128	213	0	0	0
Chungbuk	4	93	114	0	1	3	5	72	156	0	0	0
Chungnam	3	154	198	0	0	3	5	155	271	0	0	0
Jeonbuk	5	74	94	0	0	4	8	152	282	0	0	0
Jeonnam	4	60	64	0	0	10	4	155	263	0	0	0
Gyeongbuk	0	42	53	0	4	10	5	166	317	0	0	0
Gyeongnam	0	19	69	0	1	15	6	248	665	0	0	0
Jeju	11	51	13	0	0	2	1	71	83	0	0	0

Cum: Cumulative counts from 1st week to current week in a year

* The reported data for year 2020, 2021 are provisional but the data from 2016 to 2019 are finalized data.

† According to surveillance data, the reported cases may include all of the cases such as confirmed, suspected, and asymptomatic carrier in the group.

§ Cum. 5-year average is mean value calculated by cumulative counts from 1st week to current week for 5 preceding years.

Table 2. *(Continued)* Reported cases of infectious diseases by geography, weeks ending May 22, 2021 (21st week)*

Unit: No. of cases†

Reporting area	Diseases of Category II						Diseases of Category III					
	Meningococcal disease			Scarlet fever			Tetanus			Viral hepatitis B		
	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§
Overall	0	0	6	14	307	5,635	0	10	8	3	160	142
Seoul	0	0	1	3	41	780	0	2	1	0	17	25
Busan	0	0	0	0	18	424	0	0	0	1	8	10
Daegu	0	0	0	1	4	186	0	2	1	0	4	4
Incheon	0	0	1	0	10	265	0	0	0	0	10	9
Gwangju	0	0	0	2	43	277	0	0	0	0	7	3
Daejeon	0	0	0	0	3	197	0	1	1	0	2	5
Ulsan	0	0	0	0	14	262	0	0	0	0	3	4
Sejong	0	0	0	0	1	30	0	0	0	0	3	0
Gyonggi	0	0	2	4	82	1,586	0	2	1	1	52	35
Gangwon	0	0	1	0	5	80	0	0	0	0	4	4
Chungbuk	0	0	0	2	9	99	0	1	0	0	2	4
Chungnam	0	0	0	0	10	249	0	1	1	0	13	7
Jeonbuk	0	0	0	0	6	206	0	0	0	0	5	7
Jeonnam	0	0	0	0	16	216	0	0	1	0	8	7
Gyeongbuk	0	0	0	0	10	288	0	1	1	0	8	7
Gyeongnam	0	0	1	1	27	419	0	0	1	1	11	10
Jeju	0	0	0	1	8	71	0	0	0	0	3	1

Cum: Cumulative counts from 1st week to current week in a year

* The reported data for year 2020, 2021 are provisional but the data from 2016 to 2019 are finalized data.

† According to surveillance data, the reported cases may include all of the cases such as confirmed, suspected, and asymptomatic carrier in the group.

§ Cum. 5-year average is mean value calculated by cumulative counts from 1st week to current week for 5 preceding years.

Table 2. *(Continued)* Reported cases of infectious diseases by geography, weeks ending May 22, 2021 (21st week)*

Unit: No. of cases†

Reporting area	Diseases of Category Ⅲ											
	Japanese encephalitis			Malaria			Legionellosis			*Vibrio vulnificus* sepsis		
	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§
Overall	0	0	0	2	40	62	5	122	97	0	1	1
Seoul	0	0	0	1	6	12	1	25	28	0	0	0
Busan	0	0	0	0	1	1	0	2	6	0	0	0
Daegu	0	0	0	0	0	1	0	6	4	0	0	0
Incheon	0	0	0	0	9	7	0	3	7	0	0	0
Gwangju	0	0	0	0	0	1	1	4	1	0	0	0
Daejeon	0	0	0	0	0	1	0	1	1	0	0	0
Ulsan	0	0	0	0	1	0	0	3	1	0	0	0
Sejong	0	0	0	0	0	0	0	0	0	0	0	0
Gyonggi	0	0	0	1	21	32	1	19	22	0	1	1
Gangwon	0	0	0	0	1	3	0	3	3	0	0	0
Chungbuk	0	0	0	0	0	1	0	2	3	0	0	0
Chungnam	0	0	0	0	1	1	0	2	3	0	0	0
Jeonbuk	0	0	0	0	0	0	0	12	3	0	0	0
Jeonnam	0	0	0	0	0	0	0	10	3	0	0	0
Gyeongbuk	0	0	0	0	0	1	0	3	7	0	0	0
Gyeongnam	0	0	0	0	0	1	1	8	3	0	0	0
Jeju	0	0	0	0	0	0	1	19	2	0	0	0

Cum: Cumulative counts from 1st week to current week in a year

* The reported data for year 2020, 2021 are provisional but the data from 2016 to 2019 are finalized data.

† According to surveillance data, the reported cases may include all of the cases such as confirmed, suspected, and asymptomatic carrier in the group.

§ Cum. 5-year average is mean value calculated by cumulative counts from 1st week to current week for 5 preceding years.

Table 2. *(Continued)* Reported cases of infectious diseases by geography, weeks ending May 22, 2021 (21st week)*

Unit: No. of cases†

Reporting area	Diseases of Category Ⅲ											
	Murine typhus			Scrub typhus			Leptospirosis			Brucellosis		
	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§
Overall	0	6	1	12	271	381	1	41	15	0	2	1
Seoul	0	0	0	0	9	18	0	0	1	0	0	1
Busan	0	0	0	0	14	17	0	3	1	0	0	0
Daegu	0	0	0	0	11	3	0	1	0	0	0	0
Incheon	0	4	0	0	2	9	0	4	0	0	0	0
Gwangju	0	0	0	1	7	8	0	1	1	0	0	0
Daejeon	0	0	0	0	2	8	0	1	0	0	0	0
Ulsan	0	0	0	0	3	9	0	0	0	0	0	0
Sejong	0	0	0	0	0	2	0	0	0	0	0	0
Gyonggi	0	1	0	1	15	33	0	3	3	0	2	0
Gangwon	0	0	0	0	3	9	0	7	1	0	0	0
Chungbuk	0	0	0	0	3	8	1	8	1	0	0	0
Chungnam	0	0	1	1	17	37	0	5	2	0	0	0
Jeonbuk	0	0	0	3	72	37	0	5	1	0	0	0
Jeonnam	0	0	0	4	66	94	0	1	2	0	0	0
Gyeongbuk	0	0	0	0	7	23	0	2	1	0	0	0
Gyeongnam	0	0	0	2	34	59	0	0	1	0	0	0
Jeju	0	1	0	0	6	7	0	0	0	0	0	0

Cum: Cumulative counts from 1st week to current week in a year

* The reported data for year 2020, 2021 are provisional but the data from 2016 to 2019 are finalized data.

† According to surveillance data, the reported cases may include all of the cases such as confirmed, suspected, and asymptomatic carrier in the group.

§ Cum. 5-year average is mean value calculated by cumulative counts from 1st week to current week for 5 preceding years.

Table 2. *(Continued)* Reported cases of infectious diseases by geography, weeks ending May 22, 2021 (21st week)*

Unit: No. of cases†

Reporting area	Diseases of Category Ⅲ											
	Hemorrhagic fever with renal syndrome			Creutzfeldt-Jacob Disease			Dengue fever			Q fever		
	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§
Overall	4	73	90	0	46	17	0	0	63	0	17	39
Seoul	0	1	5	0	5	5	0	0	19	0	1	2
Busan	0	0	2	0	6	1	0	0	4	0	1	1
Daegu	0	4	1	0	4	1	0	0	4	0	0	1
Incheon	0	1	2	0	3	0	0	0	3	0	0	1
Gwangju	0	2	1	0	1	0	0	0	1	0	0	1
Daejeon	0	0	1	0	1	0	0	0	0	0	2	1
Ulsan	0	0	0	0	0	0	0	0	2	0	0	1
Sejong	0	0	0	0	0	0	0	0	0	0	0	0
Gyonggi	0	9	25	0	13	4	0	0	19	0	2	6
Gangwon	0	3	4	0	3	1	0	0	2	0	0	0
Chungbuk	0	1	5	0	0	0	0	0	1	0	2	7
Chungnam	0	11	9	0	2	1	0	0	2	0	5	5
Jeonbuk	3	25	8	0	2	1	0	0	1	0	1	3
Jeonnam	1	10	12	0	1	0	0	0	1	0	1	5
Gyeongbuk	0	4	10	0	1	2	0	0	1	0	1	2
Gyeongnam	0	2	4	0	3	1	0	0	2	0	1	3
Jeju	0	0	1	0	1	0	0	0	1	0	0	0

Cum: Cumulative counts from 1st week to current week in a year

* The reported data for year 2020, 2021 are provisional but the data from 2016 to 2019 are finalized data.

† According to surveillance data, the reported cases may include all of the cases such as confirmed, suspected, and asymptomatic carrier in the group.

§ Cum. 5-year average is mean value calculated by cumulative counts from 1st week to current week for 5 preceding years.

Table 2. *(Continued)* Reported cases of infectious diseases by geography, weeks ending May 22, 2021 (21st week)*

Unit: No. of cases†

Reporting area	Diseases of Category Ⅳ								
	Lyme Borreliosis			Severe fever with thrombocytopenia syndrome			Zika virus infection		
	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§
Overall	0	0	4	0	7	12	0	0	–
Seoul	0	0	2	0	0	0	0	0	–
Busan	0	0	0	0	0	0	0	0	–
Daegu	0	0	0	0	0	0	0	0	–
Incheon	0	0	0	0	0	0	0	0	–
Gwangju	0	0	0	0	0	0	0	0	–
Daejeon	0	0	0	0	0	0	0	0	–
Ulsan	0	0	0	0	0	0	0	0	–
Sejong	0	0	0	0	0	0	0	0	–
Gyonggi	0	0	1	0	0	1	0	0	–
Gangwon	0	0	0	0	0	1	0	0	–
Chungbuk	0	0	0	0	0	0	0	0	–
Chungnam	0	0	0	0	0	2	0	0	–
Jeonbuk	0	0	0	0	1	1	0	0	–
Jeonnam	0	0	0	0	1	1	0	0	–
Gyeongbuk	0	0	1	0	1	2	0	0	–
Gyeongnam	0	0	0	0	2	2	0	0	–
Jeju	0	0	0	0	2	2	0	0	–

Cum: Cumulative counts from 1st week to current week in a year

* The reported data for year 2020, 2021 are provisional but the data from 2016 to 2019 are finalized data.

† According to surveillance data, the reported cases may include all of the cases such as confirmed, suspected, and asymptomatic carrier in the group.

§ Cum. 5-year average is mean value calculated by cumulative counts from 1st week to current week for 5 preceding years.

1. Influenza, Republic of Korea, weeks ending May 22, 2021 (21st week)

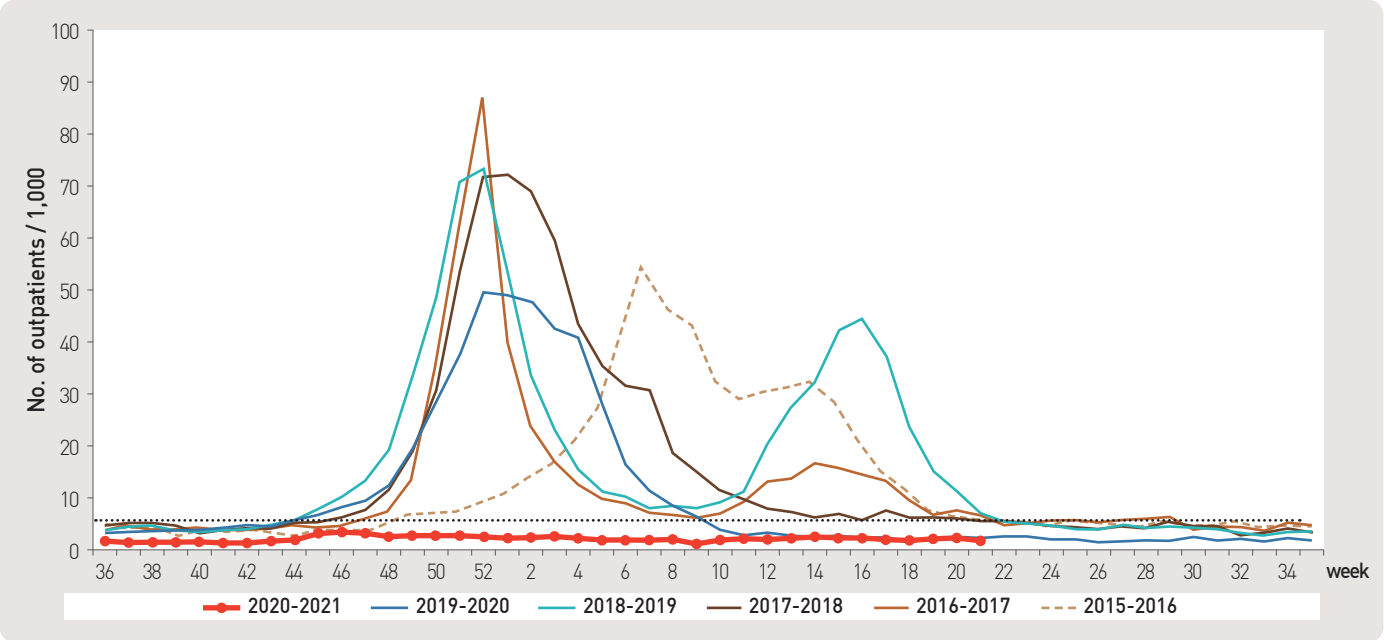


Figure 1. Weekly proportion of influenza-like illness per 1,000 outpatients, 2017-2018 to 2020-2021 flu seasons

2. Hand, Foot and Mouth Disease(HFMD), Republic of Korea, weeks ending May 22, 2021 (21st week)

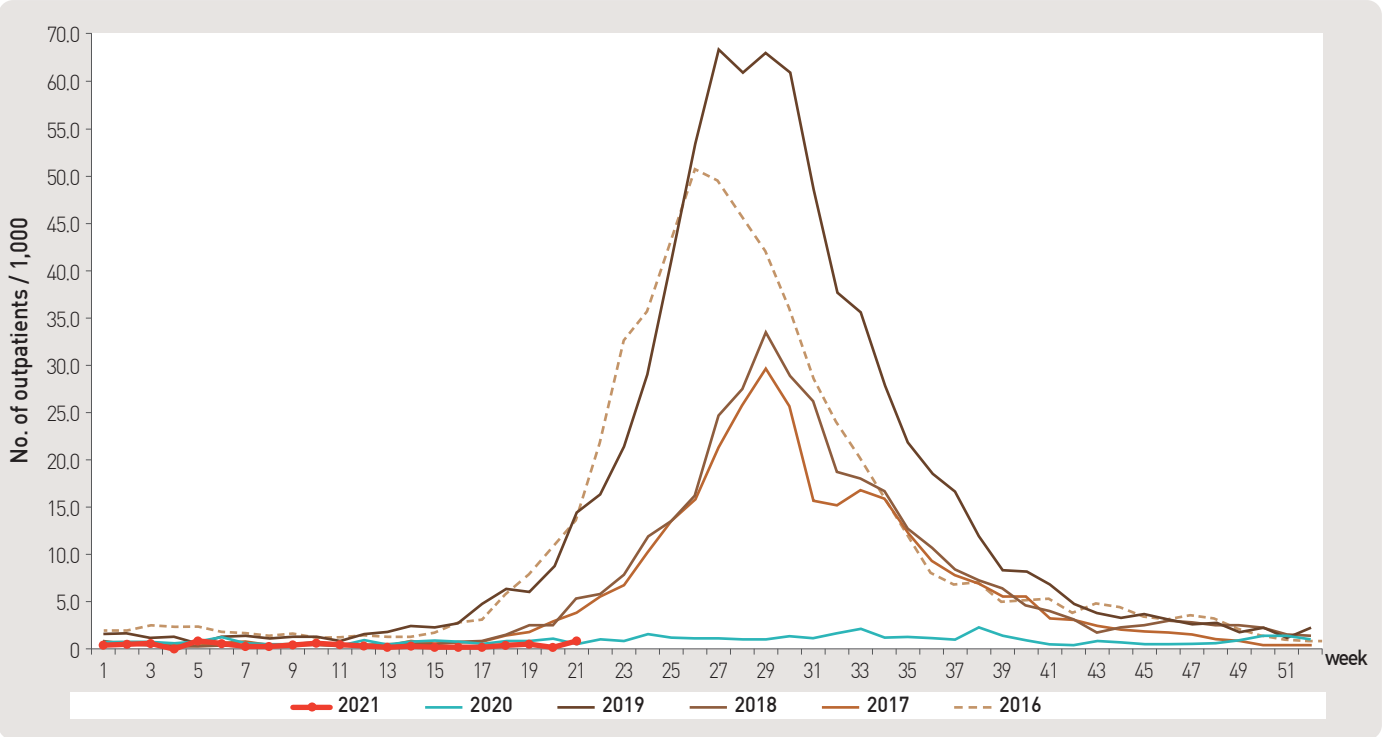


Figure 2. Weekly proportion of hand, foot and mouth disease per 1,000 outpatients, 2016-2021

3. Ophthalmologic infectious disease, Republic of Korea, weeks ending May 22, 2021 (21st week)

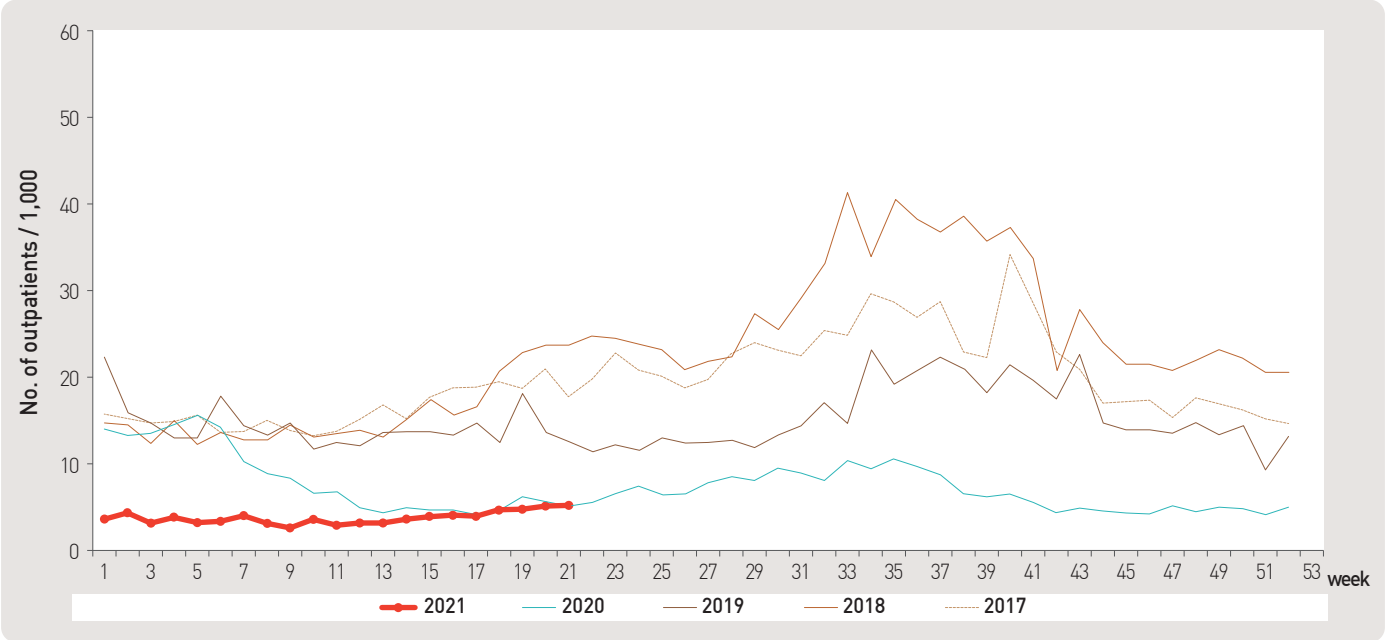


Figure 3. Weekly proportion of epidemic keratoconjunctivitis per 1,000 outpatients

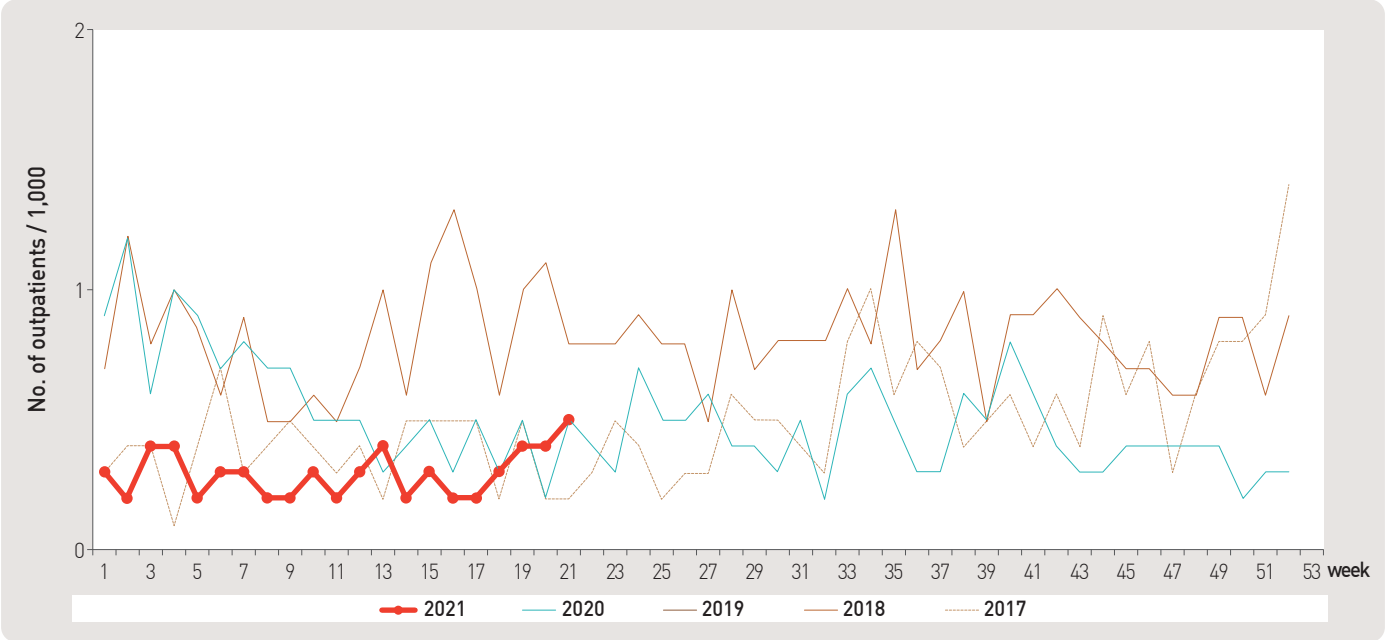


Figure 4. Weekly proportion of acute hemorrhagic conjunctivitis per 1,000 outpatients

4. Sexually Transmitted Diseases†, Republic of Korea, weeks ending May 22, 2021 (21st week)

Unit: No. of cases/sentinels

Gonorrhea			Chlamydia			Genital herpes			Condyloma acuminata		
Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§
1.3	4.1	5.1	1.4	11.7	14.9	2.5	18.8	19.2	2.2	11.1	11.3

Human Papilloma virus infection			Syphilis								
			Primary			Secondary			Congenital		
Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§	Current week	Cum. 2021	Cum. 5-year average§
4.1	43.1	6.8	1.5	1.8	0.3	0.0	1.7	0.4	0.0	1.0	0.2

Cum: Cumulative counts from 1st week to current week in a year

† According to surveillance data, the reported cases may include all of the cases such as confirmed, suspected, and asymptomatic carrier in the group.

§ Cum. 5-year average is mean value calculated by cumulative counts from 1st week to current week for 5 preceding years.

▣ Waterborne and foodborne disease outbreaks, Republic of Korea, weeks ending May 22, 2021 (21st week)

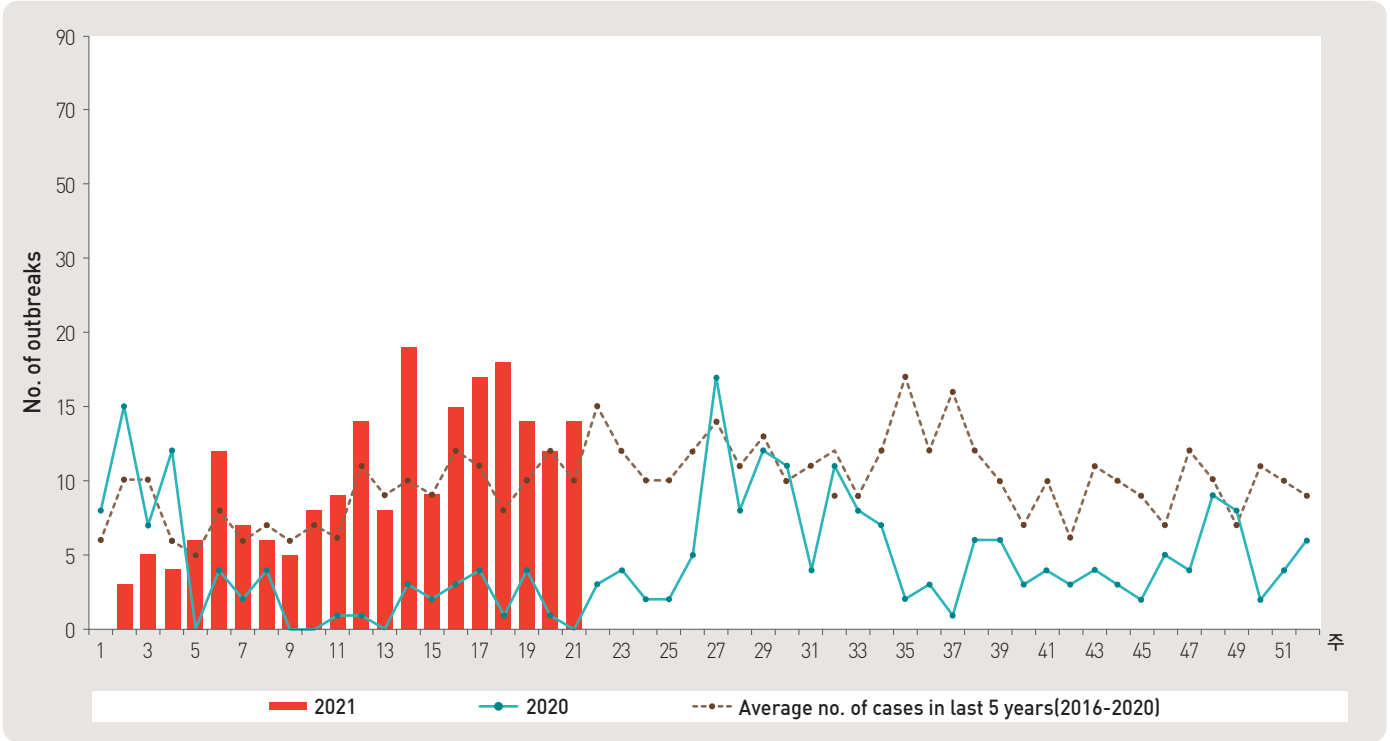


Figure 5. Number of waterborne and foodborne disease outbreaks reported by week, 2020–2021

1. Influenza viruses, Republic of Korea, weeks ending May 22, 2021 (21st week)

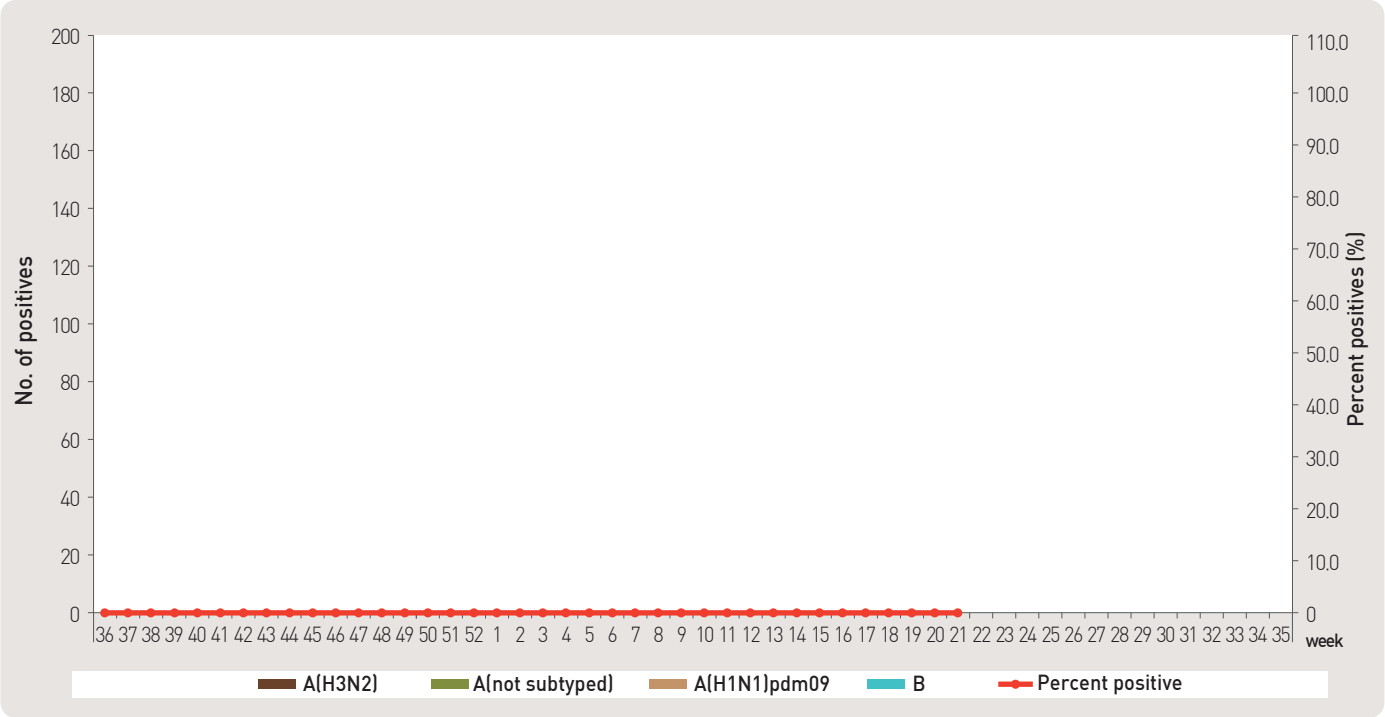


Figure 6. Number of specimens positive for influenza by subtype, 2020–2021 flu season

2. Respiratory viruses, Republic of Korea, weeks ending May 22, 2021 (21st week)

2021 (week)	Weekly total		Detection rate (%)							
	No. of samples	Detection rate (%)	HAdV	HPIV	HRSV	IFV	HCoV	HRV	HBoV	HMPV
18	93	71.0	7.5	0.0	0.0	0.0	1.1	43.0	19.4	0.0
19	67	67.2	9.0	0.0	0.0	0.0	1.5	41.8	14.9	0.0
20	115	71.3	4.3	0.0	0.0	0.0	0.9	47.8	18.3	0.0
21	74	86.5	13.5	0.0	0.0	0.0	1.4	44.6	27.0	0.0
Cum.※	349	73.6	8.0	0.0	0.0	0.0	1.1	44.7	19.8	0.0
2020 Cum.∀	5,819	48.6	6.5	0.4	3.1	12.0	3.4	18.4	3.5	1.4

- HAdV : human Adenovirus, HPIV : human Parainfluenza virus, HRSV : human Respiratory syncytial virus, IFV : Influenza virus, HCoV : human Coronavirus, HRV : human Rhinovirus, HBoV : human Bocavirus, HMPV : human Metapneumovirus
※ Cum. : the rate of detected cases between April 25, 2021 – May 22, 2021 (Average No. of detected cases is 87 last 4 weeks)
∀ 2020 Cum. : the rate of detected cases between December 29, 2019 – December 26, 2020

▣ Acute gastroenteritis-causing viruses and bacteria, Republic of Korea, weeks ending May 15, 2021 (20th week)

◆ Acute gastroenteritis-causing viruses

Week		No. of sample	No. of detection (Detection rate, %)					
			Norovirus	Group A Rotavirus	Enteric Adenovirus	Astrovirus	Sapovirus	Total
2021	17	75	17(22.7)	0(0.0)	1(1.3)	6(8.0)	0(0.0)	24(32.0)
	18	73	19(26.0)	0(0.0)	0(0.0)	16(21.9)	0(0.0)	35(47.9)
	19	68	19(27.9)	0(0.0)	1(1.5)	9(13.2)	0(0.0)	29(42.6)
	20	48	17(35.4)	0(0.0)	1(2.1)	5(10.4)	0(0.0)	23(47.9)
Cum.		1,397	456(32.6)	21(1.5)	13(0.9)	67(4.8)	2(0.1)	559(40.0)

* The samples were collected from children ≤5 years of sporadic acute gastroenteritis in Korea.

◆ Acute gastroenteritis-causing bacteria

Week		No. of sample	No. of isolation (Isolation rate, %)								
			Salmonella spp.	Pathogenic *E.coli*	*Shigella spp.*	*V.parahaemolyticus*	*V. cholerae*	*Campylobacter spp.*	*C.perfringens*	*S. aureus*	*B. cereus*	Total
2021	17	184	5 (2.7)	6 (3.3)	1 (0.5)	0 (0.0)	0 (0.0)	3 (1.6)	3 (1.6)	6 (3.3)	4 (2.2)	24 (12.6)
	18	189	6 (3.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (1.6)	8 (4.2)	11 (5.8)	1 (0.5)	29 (15.8)
	19	179	3 (1.7)	2 (1.1)	0 (0.0)	0 (0.0)	0 (0.0)	4 (2.2)	5 (2.8)	1 (0.6)	1 (0.6)	29 (15.9)
	20	134	1 (0.7)	3 (2.2)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.7)	2 (1.5)	4 (3.0)	0 (0.0)	11 (8.2)
Cum.		3,800	52 (1.4)	51 (1.3)	2 (0.1)	0 (0.0)	0 (0.0)	39 (1.0)	90 (2.4)	129 (3.4)	46 (1.2)	417 (11.0)

* Bacterial Pathogens: *Salmonella spp., E. coli (EHEC, ETEC, EPEC, EIEC), Shigella spp., Vibrio parahaemolyticus, Vibrio cholerae, Campylobacter spp., Clostridium perfringens, Staphylococcus aureus, Bacillus cereus, Listeria monocytogenes, Yersinia enterocolitica.*
* hospital participating in Laboratory surveillance in 2021(69 hospitals)

▣ Enterovirus, Republic of Korea, weeks ending May 15, 2021 (20th week)

◆ Aseptic meningitis

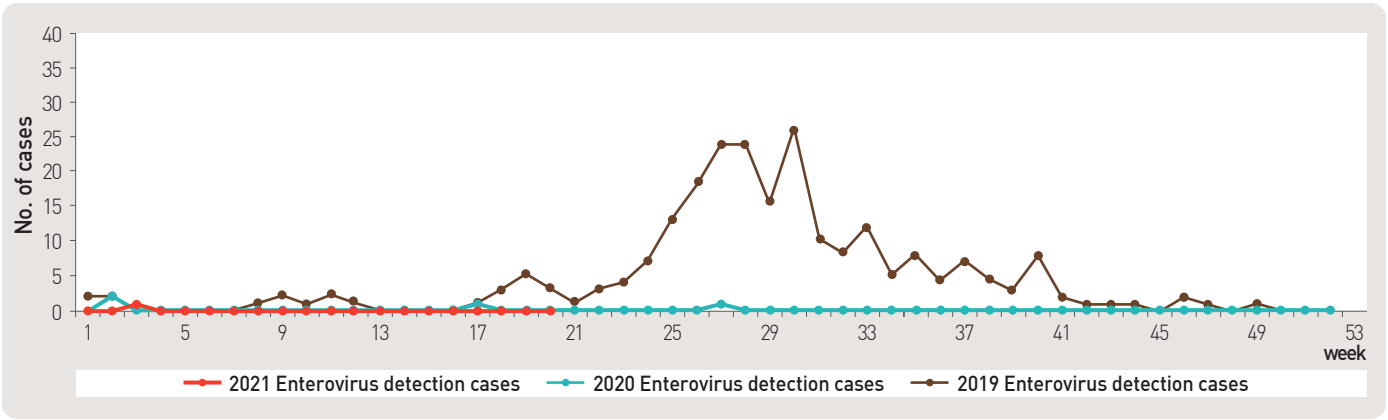


Figure 7. Detection case of enterovirus in aseptic meningitis patients from 2019 to 2021

◆ HFMD and Herpangina

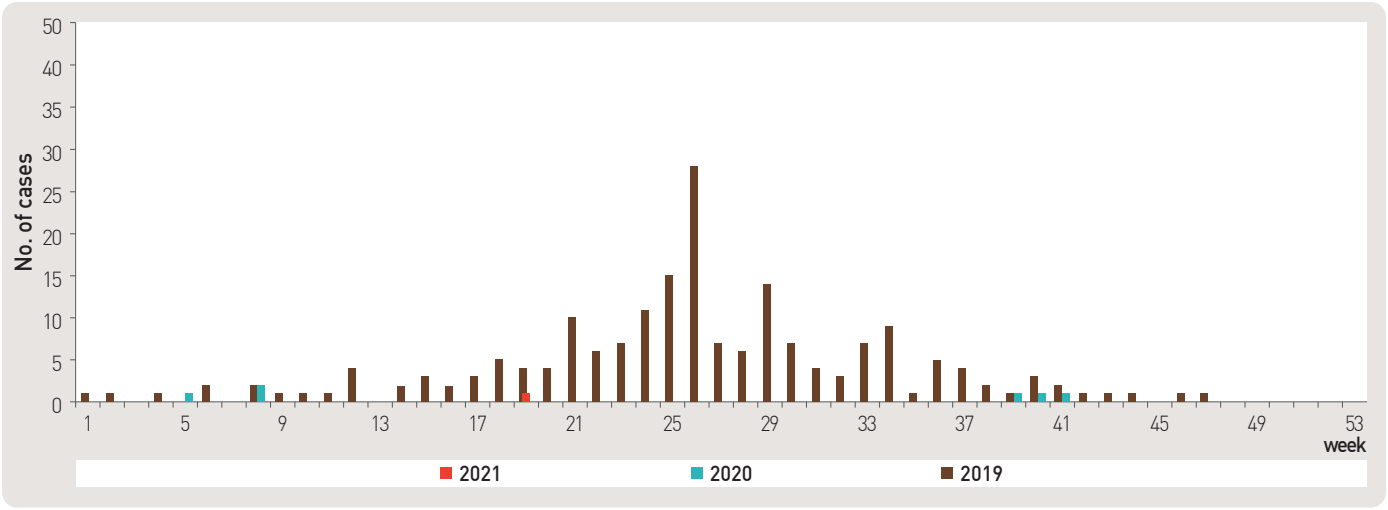


Figure 8. Detection case of enterovirus in HFMD and herpangina patients from 2019 to 2021

◆ HFMD with Complications

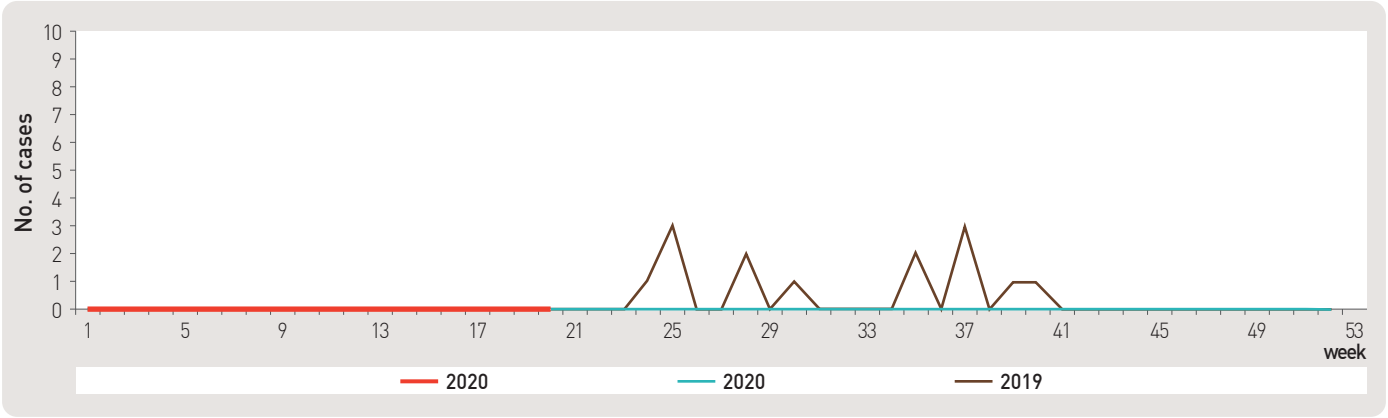
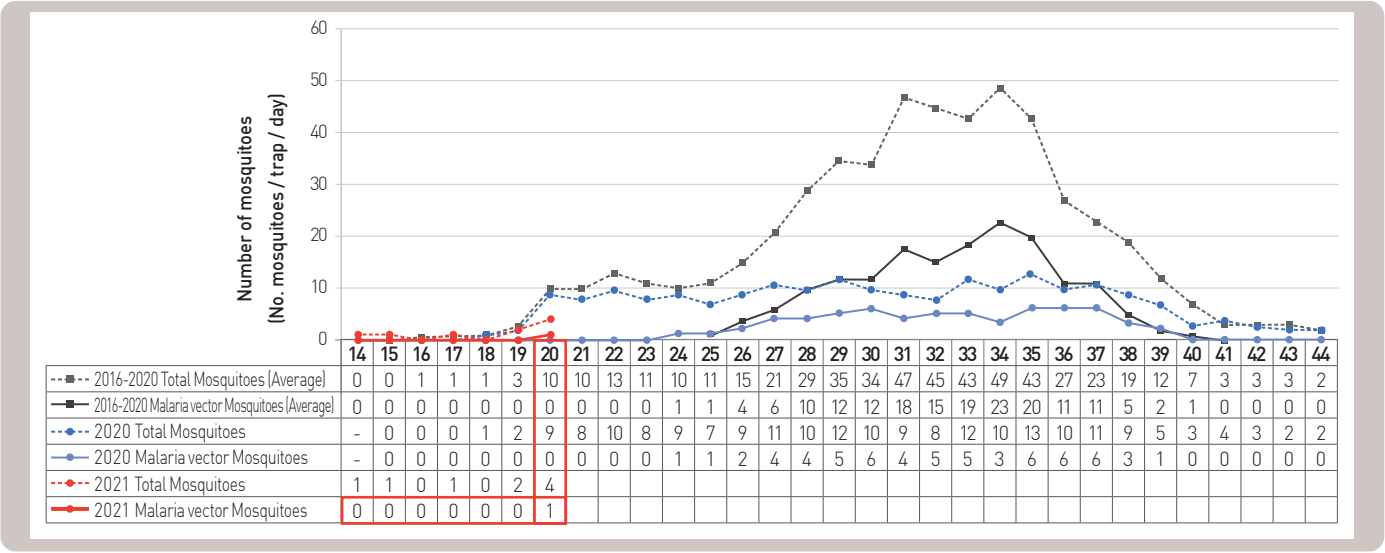


Figure 9. Detection case of enterovirus in HFMD with complications patients from 2019 to 2021

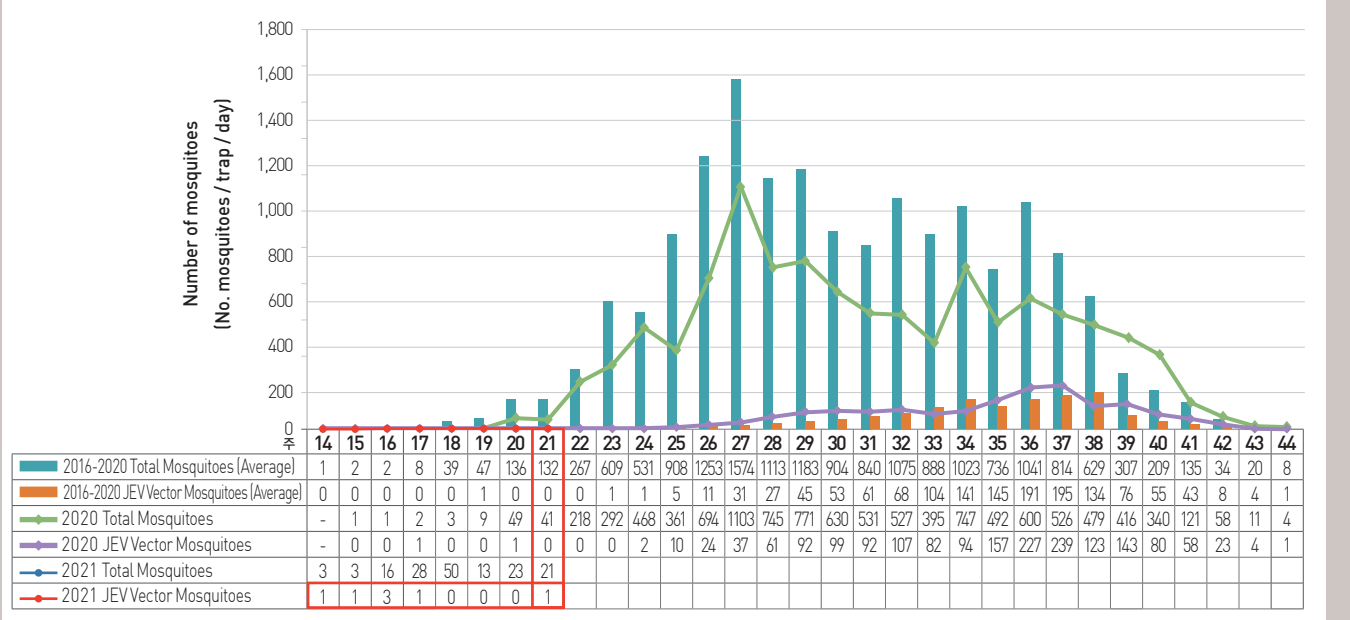
▣ Vector surveillance / malaria vector mosquitoes, Republic of Korea, week ending May 15, 2021 (20th week)



주	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
2016-2020 Total Mosquitoes (Average)	0	0	1	1	1	3	10	10	13	11	10	11	15	21	29	35	34	47	45	43	49	43	27	23	19	12	7	3	3	3	2
2016-2020 Malaria vector Mosquitoes (Average)	0	0	0	0	0	0	0	0	0	0	1	1	4	6	10	12	12	18	15	19	23	20	11	11	5	2	1	0	0	0	0
2020 Total Mosquitoes	-	0	0	0	1	2	9	8	10	8	9	7	9	11	10	12	10	9	8	12	10	13	10	11	9	5	3	4	3	2	2
2020 Malaria vector Mosquitoes	-	0	0	0	0	0	0	0	0	0	1	1	2	4	4	5	6	4	5	5	3	6	6	6	3	1	0	0	0	0	0
2021 Total Mosquitoes	1	1	0	1	0	2	4																								
2021 Malaria vector Mosquitoes	0	0	0	0	0	0	1																								

Figure 10. The weekly incidences of malaria vector mosquitoes in 2021

▣ Vector surveillance / Japanese encephalitis vector mosquitoes, Republic of Korea, week ending May 22, 2021 (21st week)



주	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
2016-2020 Total Mosquitoes (Average)	1	2	2	8	39	47	136	132	267	609	531	908	1253	1574	1113	1183	904	840	1075	888	1023	736	1041	814	629	307	209	135	34	20	8
2016-2020 JEV Vector Mosquitoes (Average)	0	0	0	0	0	1	0	0	0	1	1	5	11	31	27	45	53	61	68	104	141	145	191	195	134	76	55	43	8	4	1
2020 Total Mosquitoes	-	1	1	2	3	9	49	41	218	292	468	361	694	1103	745	771	630	531	527	395	747	492	600	526	479	416	340	121	58	11	4
2020 JEV Vector Mosquitoes	-	0	0	1	0	0	1	0	0	0	2	10	24	37	61	92	99	92	107	82	94	157	227	239	123	143	80	58	23	4	1
2021 Total Mosquitoes	3	3	16	28	50	13	23	21																							
2021 JEV Vector Mosquitoes	1	1	3	1	0	0	0	1																							

Figure 11. The weekly incidences of Japanese encephalitis vector mosquitoes in 2021

About PHWR Disease Surveillance Statistics

The Public Health Weekly Report (PHWR) Disease Surveillance Statistics is prepared by the Korea Disease Control and Prevention Agency (KDCA). These provisional surveillance data on the reported occurrence of national notifiable diseases and conditions are compiled through population-based or sentinel-based surveillance systems and published weekly, except for data on infrequent or recently-designated diseases. These surveillance statistics are informative for analyzing infectious disease or condition numbers and trends. However, the completeness of data might be influenced by some factors such as a date of symptom or disease onset, diagnosis, laboratory result, reporting of a case to a jurisdiction, or notification to Korea Disease Control and Prevention Agency. The official and final disease statistics are published in infectious disease surveillance yearbook annually.

Using and Interpreting These Data in Tables

- Current Week – The number of cases under current week denotes cases who have been reported to KDCA at the central level via corresponding jurisdictions(health centers, and health departments) during that week and accepted/approved by surveillance staff.
- Cum. 2021 – For the current year, it denotes the cumulative(Cum) year-to-date provisional counts for the specified condition.
- 5-year weekly average – The 5-year weekly average is calculated by summing, for the 5 proceeding years, the provisional incidence counts for the current week, the two weeks preceding the current week, and the two weeks following the current week. The total sum of cases is then divided by 25 weeks. It gives help to discern the statistical aberration of the specified disease incidence by comparing difference between counts under current week and 5-year weekly average.

For example,

* 5-year weekly average for current week= (X1 + X2 + … + X25) / 25

	10	11	12	13	14
2021			Current week		
2020	X1	X2	X3	X4	X5
2019	X6	X7	X8	X9	X10
2018	X11	X12	X13	X14	X15
2017	X16	X17	X18	X19	X20
2016	X21	X22	X23	X24	X25

- Cum. 5-year average – Mean value calculated by cumulative counts from 1st week to current week for 5 preceding years. It gives help to understand the increasing or decreasing pattern of the specific disease incidence by comparing difference between cum. 2021 and cum. 5-year average.

Contact Us

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