Abstract

Results of the water- and foodborne disease surveillance during the summer of 2021

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The "Enhanced Surveillance of Water- and Foodborne Disease Outbreaks", is an intensified monitoring system that can respond quickly to mass outbreaks. The surveillance is used to prevent water- and foodborne diseases when temperatures are expected to increase in the summer. The Korea Disease Control and Prevention Agency (KDCA) operates the "Enhanced Surveillance of Water- and Foodborne Disease Outbreaks" based on reports of municipal, provincial, city, and district health centers nationwide from May 1 to September 30 every year to manage mass outbreaks. To do so, the central government maintains a 24-hour work system, and local governments work from 9 AM to 8 PM on weekdays, and from 9 AM to 4 PM on weekends and holidays.

A total of 215 outbreak cases of water- and foodborne disease were reported during the operation of 2021 surveillance system. Notably, there were 45.6% more new cases than at the same point last year. There were 51 cases (23.7%) in May, 50 cases (23.3%) in June, 39 cases (18.1%) in July, 45 cases (20.9%) in August, and 30 cases (14.0%) in September. The outbreak occurred the most in Gyeonggi (44 cases), and Chungnam (26 cases), Gyeongnam (21 cases) respectively. This is because there were mass outbreaks in gimbap restaurants in Gyeonggi, and in wheat noodles restaurants in Busan. Most outbreaks occurred in restaurants (86 cases), followed by daycare centers (59 cases), and school facilities including kindergartens (26 cases).

By the results of the operation of the "Enhanced Surveillance of Water- and Foodborne Disease Outbreaks", it is expected to identify the trend and cause of Water- and foodborne infectious diseases and use it to improve strategic planning.

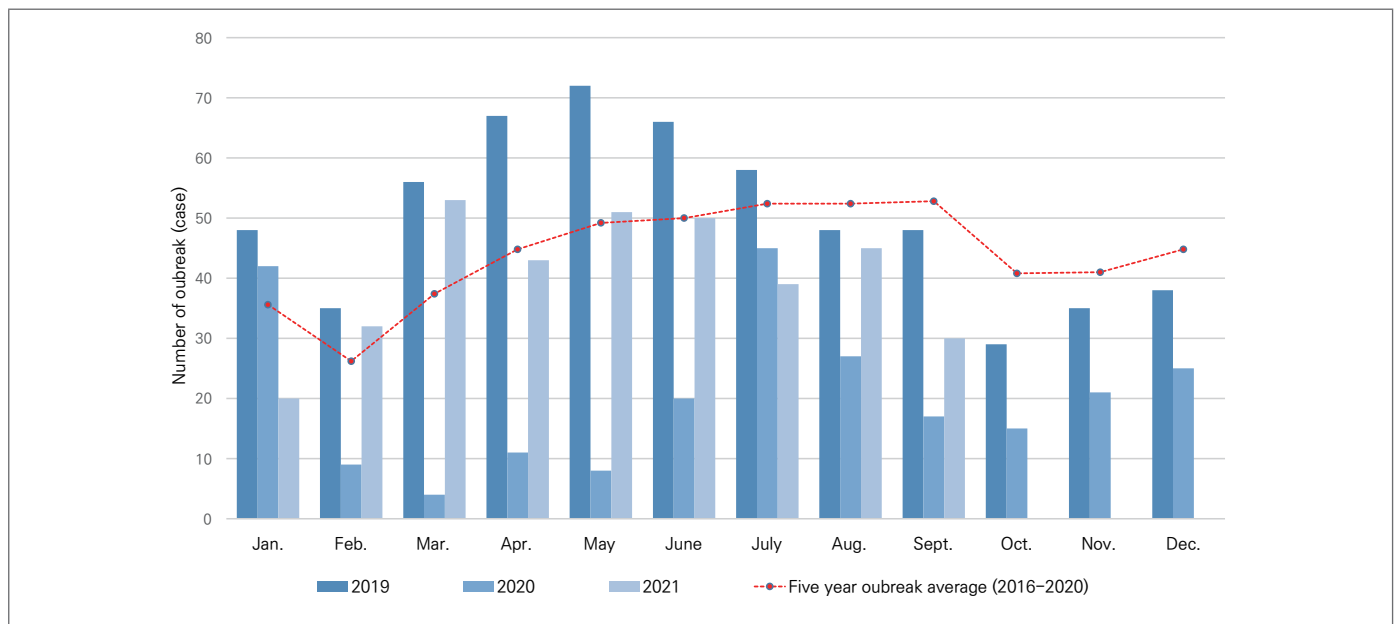**Keywords:** Water- and foodborne disease, Outbreaks, Surveillance

Figure 1. The trend of mass outbreaks of water- and foodborne infectious diseases

[a] The reported data for year 2020, 2021 are provisional

Table 1. The number of mass outbreaks of water- and foodborne infectious diseases per month

Classification	Total(%)		May		June		July		August		September	
	No. of Case (%)	No. of Patient (%)	No. of Case (%)	No. of Patient (%)	No. of Case (%)	No. of Patient (%)	No. of Case (%)	No. of Patient (%)	No. of Case (%)	No. of Patient (%)	No. of Case (%)	No. of Patient (%)
2021[a]	215 (100.0)	3,342 (100.0)	51 (23.7)	637 (19.1)	50 (23.3)	595 (17.8)	39 (18.1)	1,084 (32.4)	45 (20.9)	533 (15.9)	30 (14.0)	493 (14.8)
2020[a]	117 (100.0)	1,852 (100.0)	8 (6.8)	89 (4.8)	20 (17.1)	520 (28.1)	45 (38.5)	740 (40.0)	27 (23.1)	311 (16.8)	17 (14.5)	192 (10.4)
2019	292 (100.0)	3429 (100.0)	72 (24.7)	873 (25.5)	66 (22.6)	952 (27.8)	58 (19.9)	772 (22.5)	48 (16.4)	517 (15.1)	48 (16.4)	315 (9.2)
2018	328 (100.0)	10,608 (100.0)	62 (18.9)	1,213 (11.4)	51 (15.5)	1,068 (10.1)	69 (21.0)	979 (9.2)	50 (15.2)	1,586 (15.0)	96 (29.3)	5,762 (54.3)
2017	287 (100.0)	4,873 (100.0)	51 (17.8)	691 (14.2)	65 (22.6)	904 (18.6)	56 (19.5)	753 (15.5)	65 (22.6)	1,346 (27.6)	50 (17.4)	1,179 (24.2)
2016	260 (100.0)	5,188 (100.0)	53 (20.4)	871 (16.8)	48 (18.5)	766 (14.8)	34 (13.1)	459 (8.8)	72 (27.7)	2,516 (48.5)	53 (20.4)	576 (11.1)
Average number of outbreaks in 5 years (2016-2020)	257 (100.0)	5,190 (100.0)	49 (19.1)	747 (14.4)	50 (19.5)	842 (16.2)	52 (20.4)	741 (14.3)	52 (20.5)	1,255 (24.2)	53 (20.5)	1,605 (30.9)

[a] The reported data for year 2020, 2021 are provisional

Table 2. Number of patients with water− and foodborne infectious diseases by region[a]

Classifi−cation	Total	Seoul	Bu san[c]	Dae gu	In cheon	Gwang ju	Dae jeon	Ulsan	Se jong	Kyeong gi	Gwang won	Chung buk	Chung nam[d]	Jeon buk	Jeon nam	Kyeong buk	Kyeong nam	Jeju
No. of Case (%)	215	20	19	4	10	6	0	2	1	44	9	16	26	6	9	14	21	8
	(100.0)	(9.3)	(8.8)	(1.9)	(4.7)	(2.8)	(0.0)	(0.9)	(0.5)	(20.5)	(4.2)	(7.4)	(12.1)	(2.8)	(4.2)	(6.5)	(9.8)	(3.7)
No. of Patient (%)	3,342	236	734	105	80	28	0	15	33	626	173	119	301	112	72	153	440	115
	(100.0)	(7.1)	(22.0)	(3.1)	(2.4)	(0.8)	(0.0)	(0.4)	(1.0)	(18.7)	(5.2)	(3.6)	(9.0)	(3.4)	(2.2)	(4.6)	(13.2)	(3.4)
Incidence rate (per 100,000)[b]	65	25	219	44	27	19	0	13	90	46	113	75	142	63	39	58	133	170

[a] The reported data for year 2020, 2021 are provisional
[b] Prevalence = cases / No. in population (Based on the status of resident registered population provided by Mistry of Security and Public Administration in September 2021)
[c] About 450 patients reported in the Wheat Noodle restaurant in Yeonje−gu, Busan (2021.7.20.)
[d] About 130 patients reported from the office (food delivery) in Dangjin, Chungcheongnamdo (2021.7.14.)

Table 3. Status of water− and foodborne infectious disease outbreak by location

Classification	2021[a]		2020[a]		2019		2018		2017		2016	
	No. of Case (%)	No. of Patient (%)	No. of Case (%)	No. of Patient (%)	No. of Case (%)	No. of Patient (%)	No. of Case (%)	No. of Patient (%)	No. of Case (%)	No. of Patient (%)	No. of Case (%)	No. of Patient (%)
Daycare	59 (27.4)	678 (20.3)	8 (6.8)	109 (5.9)	9 (3.1)	147 (4.3)	12 (3.7)	163 (1.5)	4 (1.4)	19 (0.4)	2 (0.8)	24 (0.5)
School (including kindergarten)	26 (12.1)	819 (24.5)	20 (17.1)	774 (41.8)	55 (18.8)	1,469 (42.8)	71 (21.6)	6,882 (64.9)	53 (18.5)	2,821 (57.9)	60 (23.1)	3,451 (66.5)
Workplace	14 (6.5)	337 (10.1)	4 (3.4)	418 (22.6)	21 (7.2)	253 (7.4)	12 (3.7)	548 (5.2)	6 (2.1)	100 (2.1)	6 (2.3)	71 (1.4)
Home	8 (3.7)	15 (0.4)	11 (9.4)	8 (0.4)	11 (3.8)	36 (1.0)	5 (1.5)	20 (0.2)	4 (1.4)	37 (0.8)	12 (4.6)	51 (1.0)
Funeral, wedding hall	1 (0.5)	4 (0.1)	3 (2.6)	0 (0.0)	0 (0.0)	0 (0.0)	5 (1.5)	313 (3.0)	1 (0.3)	3 (0.1)	5 (1.9)	272 (5.2)
Military unit, police agency etc.	7 (3.3)	175 (5.2)	1 (0.9)	67 (3.6)	2 (0.7)	27 (0.8)	6 (1.8)	173 (1.6)	2 (0.7)	60 (1.2)	7 (2.7)	256 (4.9)
Facilities (nursing home, health center etc.)	12 (5.6)	240 (7.2)	3 (2.6)	30 (1.6)	9 (3.1)	176 (5.1)	29 (8.8)	1,270 (12.0)	13 (4.5)	344 (7.1)	13 (5.0)	180 (3.5)
Restaurant	86 (40.0)	1,068 (32.0)	66 (56.4)	445 (24.0)	159 (54.5)	1,150 (33.5)	185 (56.4)	1,226 (11.6)	199 (69.3)	1,314 (27.0)	140 (53.8)	830 16.0)
Unknown	2 (0.9)	6 (0.2)	1 (0.9)	1 (0.1)	26 (8.9)	171 (5.0)	3 (0.9)	13 (0.1)	5 (1.7)	175 (3.6)	15 (5.8)	53 (1.0)
Total	215 (100.0)	3,342 (100.0)	117 (100.0)	1,852 (100.0)	292 (100.0)	3429 (100.0)	328 (100.0)	10,608 (100.0)	287 (100.0)	4,873 (100.0)	260 (100.0)	5,188 (100.0)

[a] The reported data for year 2020, 2021 are provisional

Table 4. Status of water- and foodborne infectious disease outbreak by outbreak scale

Classification		2021[a]		2020[a]		2019		2018		2017		2016	
		No. of Case (%)	No. of. Patient (%)	No. of Case (%)	No. of. Patient (%)	No. of Case (%)	No. of. Patient (%)	No. of Case (%)	No. of. Patient (%)	No. of Case (%)	No. of. Patient (%)	No. of Case (%)	No. of. Patient (%)
Large Scale (>7 people)	<300 people	1 (0.5)	450 (13.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (1.2)	4,440 (41.9)	1 (0.3)	356 (7.3)	3 (1.2)	997 (19.2)
	100−299 people	2 (0.9)	233 (7.0)	2 (1.7)	222 (12.0)	1 (0.3)	181 (5.3)	13 (4.0)	1,843 (17.4)	9 (3.1)	1,524 (31.3)	9 (3.5)	1413 (27.2)
	50−99 people	10 (4.7)	680 (20.3)	10 (8.5)	638 (34.4)	8 (2.7)	498 (14.5)	23 (7.0)	1,602 (15.1)	12 (4.2)	892 (18.3)	10 (3.8)	725 (14.0)
	7−49 people	100 (46.5)	1,646 (49.3)	38 (32.5)	730 (39.4)	106 (36.3)	2,117 (61.7)	100 (30.5)	2,001 (18.9)	67 (23.3)	1,349 (27.7)	72 (27.7)	1,422 (27.4)
Small Scale (≤7 people)	≤7 people	102 (47.4)	333 (10.0)	67 (57.3)	262 (14.1)	177 (60.6)	633 (18.5)	188 (57.3)	722 (6.8)	198 (69.0)	752 (15.4)	166 (63.8)	631 (12.2)
Total		215	3342	117	1,852	292	3,429	328	10,608	287	4,873	260	5,188

[a] The reported data for year 2020, 2021 are provisional