COVID-19 Weekly Epidemiology Brief: Week 17, 2020

Summary

Overview of report

Disease surveillance is a core function of the National Institute for Communicable Diseases (NICD), a Division of the National Health Laboratory Service (NHLS). This report summarises information from several surveillance systems that are used to monitor the coronavirus disease 2019 (COVID-19) pandemic in South Africa. This report is based on data collected up to 27 April 2020 (week 18 of 2020). Note: COVID-19 is the name of the disease and SARS-CoV-2 is the name of the virus.

The first section summarises the epidemiology of laboratory-confirmed cases of COVID-19 in South Africa. The second section summarises data from the NICD's three sentinel syndromic surveillance programmes for influenza-like illness and hospital pneumonia, all of which were enhanced to detect SARS-CoV-2.

Highlights

- As of 23:59 on 27 April 2020, a total of 4996 laboratory-confirmed cases of COVID-19 cases, including 90 deaths, had been detected in South Africa
- Laboratory PCR-based testing for SARS-CoV-2 has steadily increased week-on-week with a larger network of testing laboratories and the implementation of targeted community symptom screening and referral for testing in early April 2020
- Cases have been detected in all provinces. The incidence risk (cumulative incidence) was highest in the Western Cape Province (27.3 cases per 100 000 persons; 95% confidence interval [CI] 26.1-28.6) followed by Gauteng Province (9.1 cases per 100 000 persons; 95% CI 8.6-9.6) and Eastern Cape Province ((9.1 cases per 100 000 persons; 95% CI 8.5-9.9)
- The median age of laboratory-confirmed cases was 38 years (interquartile range [IQR], 29-51 years). Children aged <10 years accounted for 3% (156/4996).
- The incidence risk was highest among males in the 75-79 age group (19.1 cases per 100 000 persons)
- SARS-CoV-2 was only detected in two cases through the sentinel syndromic surveillance programmes to date. This suggests limited transmission in the communities served by these sentinel facilities. Detection of influenza and respiratory syncytial viruses remained low among cases of ILI and pneumonia at the same sentinel surveillance sites (data not shown in this report). This may be partly explained by the restrictions imposed during the national lockdown.

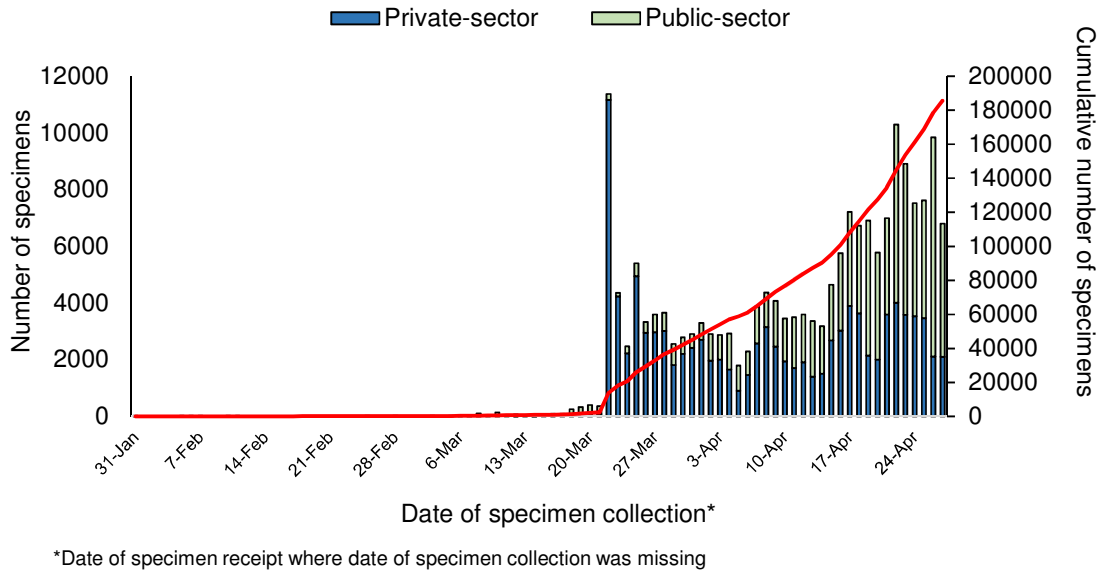
Laboratory-confirmed cases of COVID-19 in South Africa

Methods

Testing for SARS-CoV-2 began on 28 January 2020 at the NICD and after the first case was confirmed in early March 2020, testing was expanded to a larger network of private and NHLS laboratories. Respiratory specimens were submitted from persons under investigation (PUI). Initially, tested individuals were those who had travelled to countries with COVID-19 transmission but the PUI definition was changed over time. Targeted community symptom screening and referral for PCR testing was implemented in April 2020. Laboratories used any one of several in-house and commercial PCR assays to test for the presence of SARS-CoV-2 RNA. Test results were automatically fed into a data warehouse. We excluded specimens collected outside South Africa. Date of specimen receipt in the laboratory was used when date of specimen collection was missing. A case of COVID-19 was defined as any person, resident in South Africa, with a first positive SARS-CoV-2 PCR test. We used 2019 mid-year population estimates from Statistics South Africa to calculate the incidence risk or cumulative incidence (expressed as cases per 100 000 persons). Outcomes of cases (i.e. deaths or recoveries) were not collected through this surveillance system.

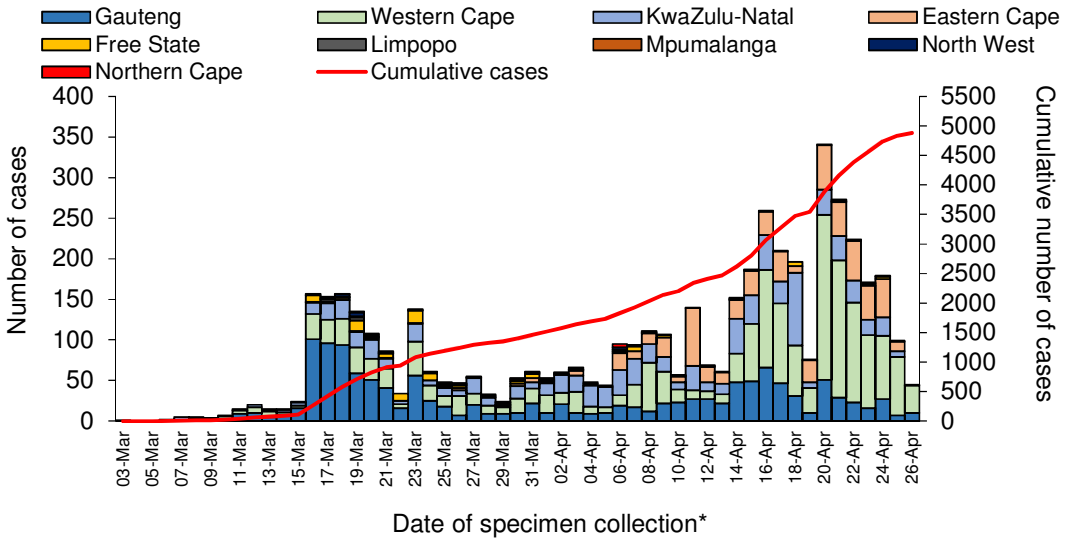
National and provincial trends

As of 27 April 2020, 185 497 tests were performed. In total, 4996 cases were detected in South Africa. The first case of COVID-19 was confirmed in early March 2020 in a KwaZulu-Natal resident who had travelled to Italy. Prior to this date, 229 people had met the eligibility criteria for SARS-CoV-2 testing and had tested negative (Figure 1). Cases of confirmed COVID-19 were initially reported in three provinces: KwaZulu-Natal, Gauteng and Western Cape provinces, and case numbers increased from 16 March 2020 as a result of increased laboratory testing coverage and changes to the eligibility criteria for testing (Figure 2 and 3). To date, cases have been reported from all nine provinces, with a majority reported from Western Cape (1870/4996, 37%), followed by Gauteng (1377/4996, 28%), KwaZulu-Natal (919/4996, 18%) and Eastern Cape (616/4996, 12%) (Table 1). Western Cape had the highest incidence risk (27.3 cases per 100 000 persons) followed by Gauteng and Eastern Cape (9.1 per 100 000 persons). Northern Cape had the lowest incidence risk (0.4 cases per 100 000 persons). This is partly explained by testing differences by province (Table 1). The number of tests performed per 100 000 persons ranged from 66 in the North West Province to 541 in the Western Cape Province.



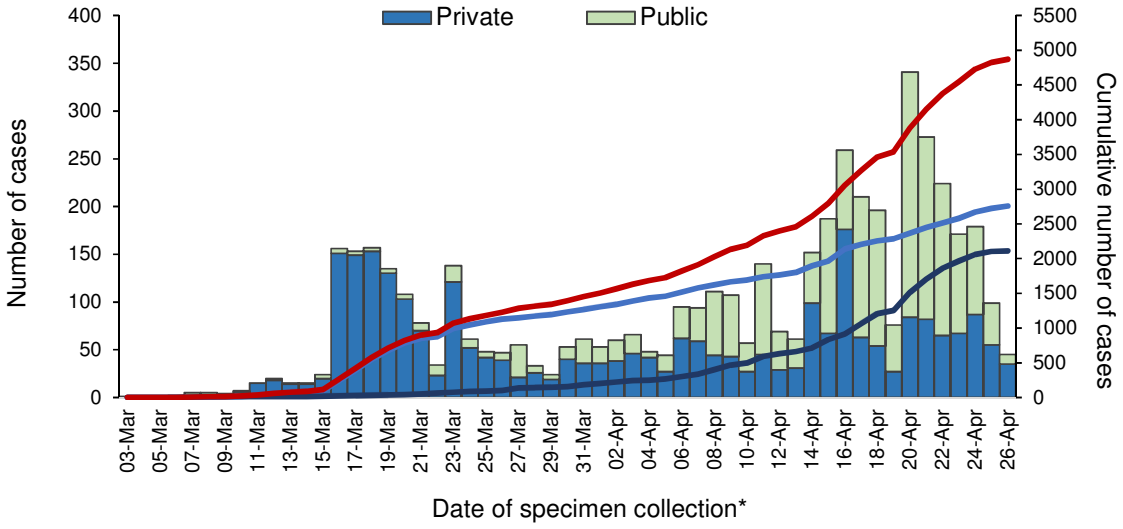
*Date of specimen receipt where date of specimen collection was missing

Figure 1. Number and cumulative number of specimens tested for SARS-CoV-2, by testing laboratory sector and date of specimen collection, South Africa, 31 January 2020-27 April 2020 (n=185497)



*Date of specimen receipt where date of specimen collection was missing

Figure 2. Number and cumulative number of laboratory-confirmed cases of COVID-19 by date of specimen collection, South Africa, 4 March-27 April 2020 (n=4996)



*Date of specimen receipt where date of specimen collection was missing

Figure 3. Number and total number of laboratory-confirmed cases of COVID-19, by testing laboratory sector and date of specimen collection, South Africa, 4 March -27 March 2020 (n=4996)

Table 1. Number and incidence risk of laboratory-confirmed cases of COVID-19 and testing per 100 000 persons by province, South Africa, 4 March–27 April 2020 (n=4996)

Province	Cases (n)	Proportion (n/total) (95% confidence interval)	Population in mid-2019* (n)	Incidence risk (cases per 100 000 persons)	Tests per 100 000 persons
Eastern Cape	616	12.3 (11.4-13.3)	6 712 276	9.1 (8.5-9.9)	247
Free State	113	2.3 (1.9-2.7)	2 887 465	3.9 (3.2-4.7)	284
Gauteng	1377	27.6 (26.3-28.8)	15 176 115	9.1 (8.6-9.6)	439
KwaZulu-Natal	919	18.3 (17.3-19.5)	11 289 086	8.1 (7.6-8.7)	270
Limpopo	31	0.6 (0.4-0.9)	5 982 584	0.5 (0.3-0.7)	69
Mpumalanga	24	0.5 (0.3-0.7)	4 592 187	0.5 (0.3-0.6)	101
North West	29	0.6 (0.4-0.8)	4 027 160	2.3 (0.1-2.7)	66
Northern Cape	17	0.3 (0.2-0.5)	1 263 875	0.4 (0.2-2.2)	111
Western Cape	1870	37.4 (36.1-38.7)	6 844 272	27.3 (26.1-28.6)	541
South Africa	**4996**	**100**	**58 775 020**	**8.5 (8.3-8.7)**	**317**

*Statistics South Africa 2019 mid-year population estimates

Characteristics of cases by age and sex

The median age of cases was 39 years (interquartile range [IQR], 29-52 years). The largest proportion of cases was in the 30-34-year age group (526/4202, 13%) followed by the 35-39-year age group (524/4202, 12%) (Figure 4). The incidence risk was among highest those in the 50-54-year age group (16.2 cases per 100 000 persons), followed by those in the 55-59-year age group (15.2 cases per 100 000 persons), with the lowest incidence risk in the 5-9-year age group (1.1 cases per 100 000 persons). (Figure 5 and Table 2). Fifty-six per cent (2795/4947) (95% CI, 55-58%) of the cases were female. The overall incidence risk was higher among females than males (9.3 cases per 100 000 persons [95%CI 8.9-9.6] versus 7.5 cases per 100 000 persons [95% CI 7.1-7.8]). However, this varied by age group with the peak incidence risk among females aged 35-39 years and males aged 75-79 years (Figure 5). This may also be partially explained by varying testing practices by age and sex (data not shown).

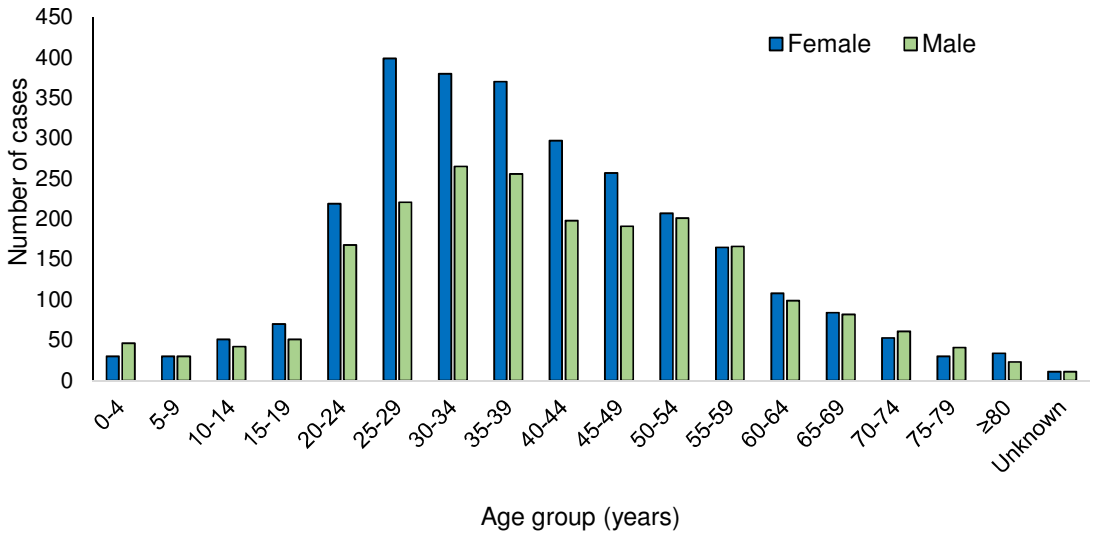


Figure 4. Number of laboratory-confirmed cases of COVID-19 by age group and sex, South Africa, 4 March-27 April 2020 (n=4996)

Table 2. Number of cases and incidence risk by age group, South Africa, 4 March 2020-27 April 2020

Age group (years)	Cases (n)	Population in mid-2019*, n	Incidence risk (cases per 100 000 persons)
0-4	77	5 733 946	1.3
5-9	61	5 737 439	1.1
10-14	94	5 427 902	1.7
15-19	121	4 660 002	2.6

Age group (years)	Cases (n)	Population in mid-2019*, n	Incidence risk (cases per 100 000 persons)
20-24	391	4 914 186	8.0
25-29	628	5 528 571	11.4
30-34	653	5 537 963	11.8
35-39	632	4 571 175	13.8
40-44	498	3 585 408	13.9
45-49	450	3 045 617	14.8
50-54	411	2 535 048	16.2
55-59	334	2 192 512	15.2
60-64	210	1 784 476	11.8
65-69	168	1 370 121	12.3
70-74	114	949 812	12.0
75-79	72	597 874	12.0
≥80	58	602 969	9.6
Unknown	24		
Total	**4996**	**58 775 022**	**8.5**

*Statistics South Africa

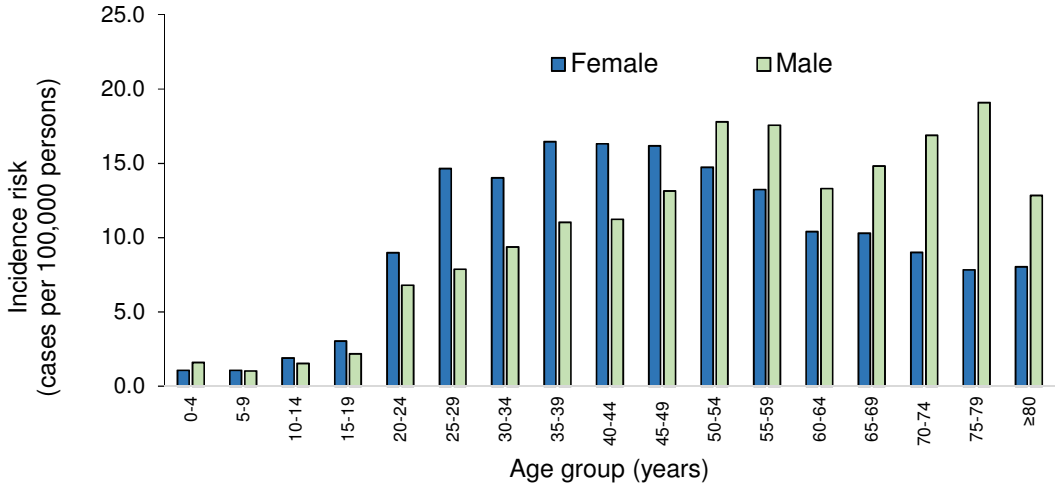


Figure 5. Incidence risk by age group and sex, South Africa, 4 March 2020-27 April 2020 (n=4972, age missing for 24 cases)

Syndromic respiratory illness surveillance for SARS-CoV-2

Methods

Syndromic respiratory illness surveillance programmes coordinated by the NICD were enhanced to include testing for COVID-19 from epidemiologic week 10 (i.e. week starting 2 March 2020). These programmes provide data to track the local spread of COVID-19 in communities and identify risk factors for severe disease. These programmes include surveillance of hospital pneumonia and outpatient influenza-like illness (ILI). Persons with fever and cough are eligible for enrolment into the ILI surveillance programmes. The Viral Watch ILI programme was established in 1984: 92 general practitioners in private practice across 8 provinces report cases of ILI and submit specimens from these case patients. ILI surveillance was also established in 2012 at public clinics in 3 provinces (Western Cape, KwaZulu-Natal and North West). Hospital pneumonia surveillance is operational at 9 sentinel hospitals in 5 provinces (Western Cape, KwaZulu-Natal, Gauteng, Mpumalanga and North West). Individuals hospitalised with a physician diagnosis of a lower respiratory tract infection are enrolled systematically. In all three programmes, respiratory specimens are submitted to an NICD reference laboratory for testing.

Results

To date, of 95 specimens tested from the Viral Watch ILI programme, one specimen tested positive for SARS-CoV-2 (Figure 6a). The specimen was from a 67-year-old female with an underlying chronic illness, who sought care with a 2-day history of fever and cough. She had not travelled outside South Africa and had no known contact with a confirmed COVID-19 case. A total of 235 cases was tested from ILI surveillance in public clinics and none tested positive (Figure 6b). Of the 482 specimens from the 6 hospital pneumonia sentinel sites in five provinces, one specimen from a 15-year-old female admitted with a lower respiratory tract infection tested positive for SARS-CoV-2. The patient was a close contact of a confirmed COVID-19 case. (Figure 7).

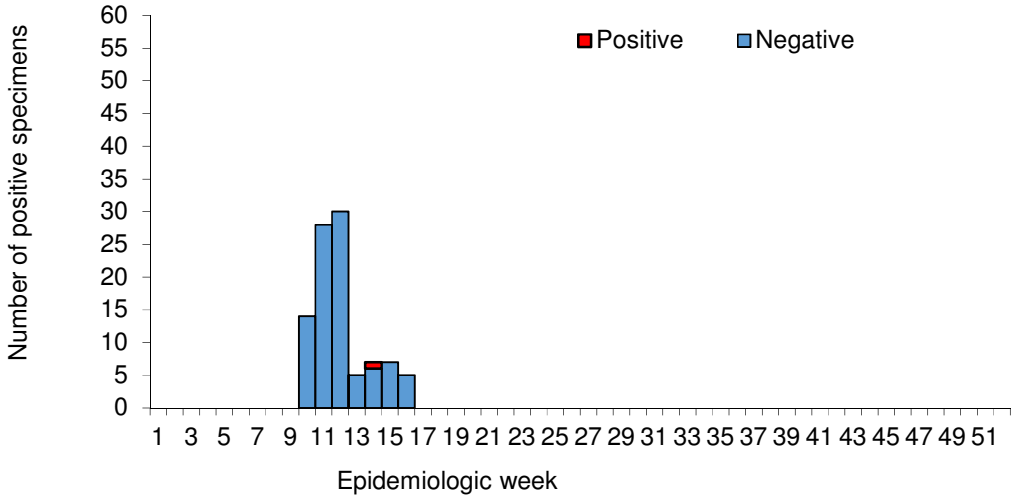


Figure 6a. Number of specimens* tested, and results, for SARS-CoV-2 by week, influenza-like illness (ILI) surveillance at private general practitioners, 9 March-27 April 2020 (n=95)

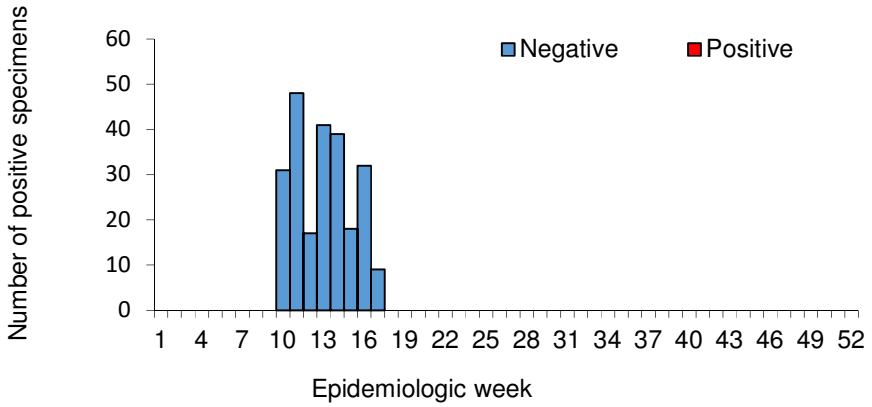


Figure 6b. Number of specimens** tested and SARS-CoV-2 results by week, influenza-like illness surveillance at public clinics, 9 March-27 April 2020 (n=235)

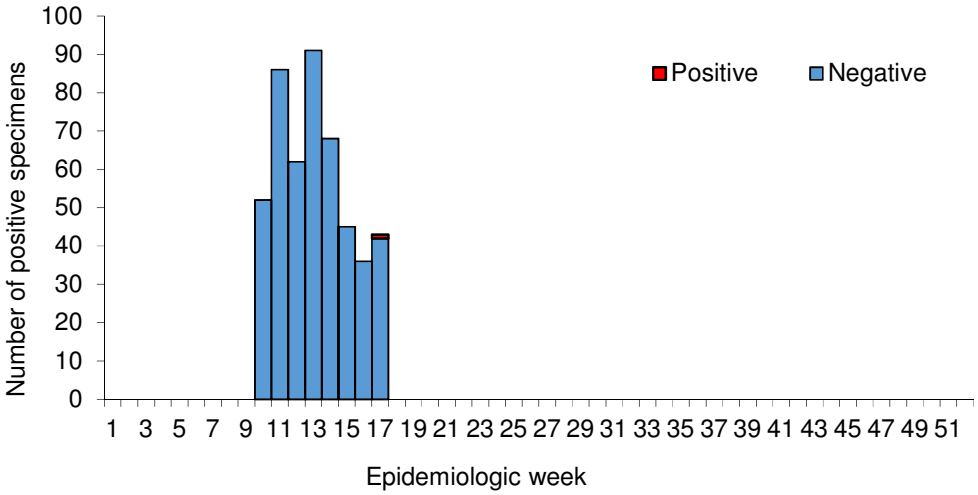


Figure 7. Number of specimens tested and SARS-CoV-2 results by week, hospital pneumonia surveillance sites, South Africa, 9 March-20 April 2020 (n=482)