ABU DHABI PUBLIC HEALTH CENTRE | مركز أبوظبي للصحة العامة

Scientific Research Monitoring on COVID-19

21 May 2020

Summary on COVID19

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SARS-COV2 virus

- The virus have been sequenced and found to be similar to MERS-CoV and SARS-CoV. Research revealed that the virus originated in a bat reservoir.
- New designation for the disease and the virus: COVID-19 and SARS-COV2.
- SARS-COV2 stay viable in aerosol for hours and in surface up to 3 days.
- Two strain have been identified for SARS-COV2 (L type (more aggressive) and S type .

Transmission

- Transmission from human to human has been confirmed. Incubation period ranges from 5 days and can reach up to 14 days.
- Suggested human-to-human transmission occurs through droplets, contact and fomites, similar to Severe Acute Respiratory Syndrome (SARS).
- Isolation is the best measure to control transmission.

Clinical features and outcome

- Non-specific and the disease presentation can range from no symptoms (asymptomatic) to severe pneumonia and death.
- Highest risk for severe disease and death include people aged over 60 years and those with underlying conditions
- Pregnant women infected with SARS-COV2 may experience symptoms similar to those of non-pregnant adults. No evidence suggests transmission from mother to newborn if infected late in pregnancy. No evidence of transmission through breast milk.

Therapies and vaccination

- Efforts currently in developing therapies for this virus focus on previously known medications and vaccination for MERS-CoV and SARS-CoV. In addition to other type of medication.
- WHO forum held 11-12 Feb 2020 to mobilize research on COVID19 vaccinations and therapies.

Summary on COVID19 (Cont.)

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COVID19 in figure

- 80% of laboratory confirmed patients have had mild to moderate disease
- 13.8% have severe disease.
- 6.1% are critical
- Children account for 2.4% of all reported cases.(less than 19 years)

Todays' Highlights

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All articles presented in this report represents the authors' views and not necessarily represents Abu Dhabi Public Health Center views or directions.

Scientific Research

- **UAE research:** genetic sequencing of the earliest cases in the UAE including genetic and clinical data.
- **Diagnosis:** a study found the prevalence of subclinical seroconversion to COVID-19 in the health care workers suggests that more health care workers may be antibody-positive than would otherwise be expected .
- **Clinical Feature:** A cohort study showed a higher prevalence of obesity among ICU patients with COVID19 compared to ICU patient without COVID19.

WHO daily report

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WHO daily report 20 May 2020

- WHO Regional Director for the Americas Dr Carissa F. Etienne highlighted that addressing COVID-19 will require protecting vulnerable groups including women, underprivileged populations, indigenous populations and migrants, by addressing health, social and economic inequalities.
- WHO has published a new Case Report Form for "Suspected cases of multisystem inflammatory syndrome (MIS) in children and adolescents temporally related to COVID-19" intended for use by public health professionals for collecting standardized data on clinical presentations, severity and outcomes.
- Uganda commissioned the first Port Health COVID-19 laboratory at the main Uganda-Tanzania border in light of potential COVID-19 importation by truck drivers. Two GeneXpert machines will be used to test all truck drivers arriving at the Mutukula point of entry, where results will become available within 45 minutes.
- A doctor from Cairo, Egypt describes how he became infected with and recovered from COVID-19 and highlights the need for health care workers to practice basic infection, prevention and control measures when interacting with patients.
- **Evidence from social science can help officials develop and implement policies** in ways that are more likely to work because they are tailored to local needs.

WHO daily report

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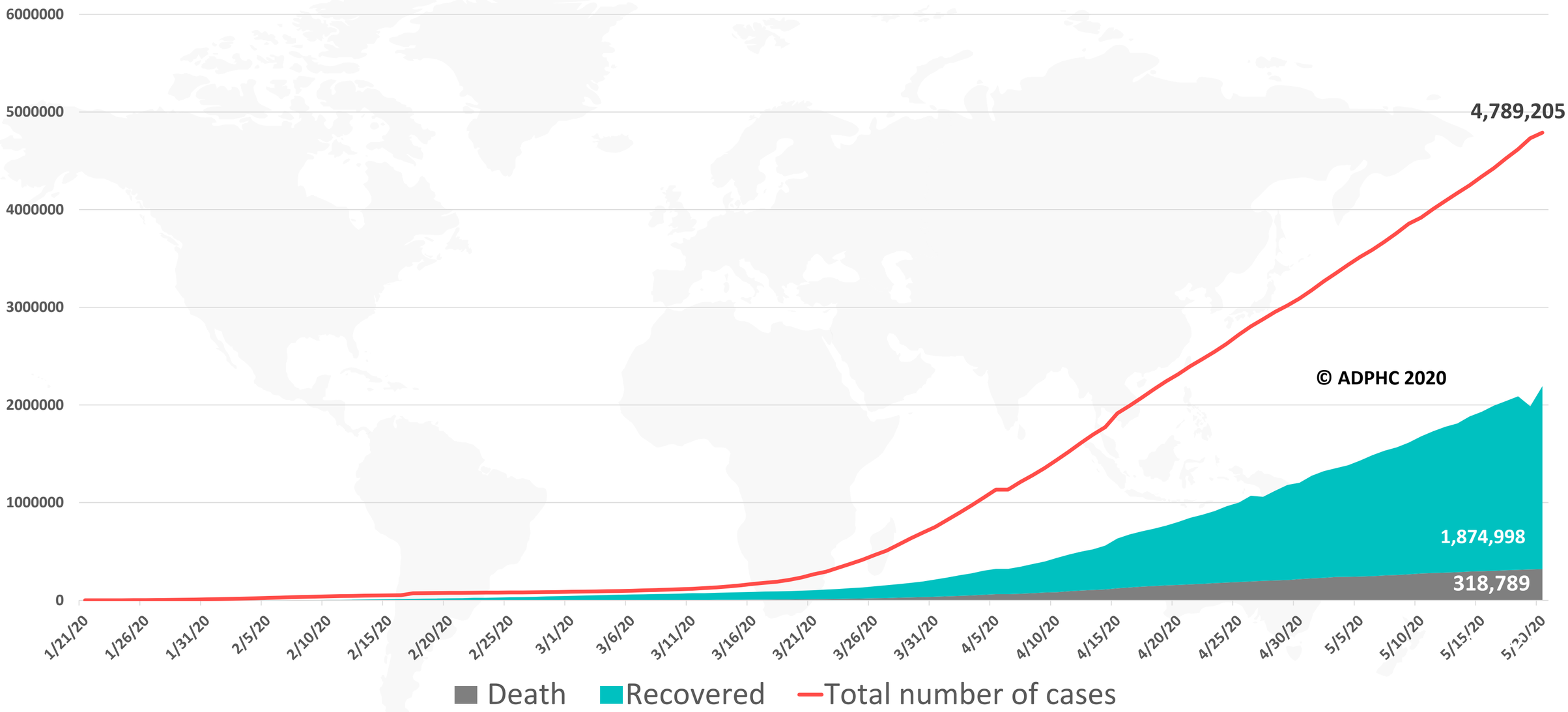
WHO daily report 20 May 2020

- WHO is implementing the COVID-19 Research Roadmap agenda to translate **evidence from the social sciences into action:**
  - First, research about the impacts of COVID-19 and the public health response, will help countries at different phases of the response to learn from others. For example, **research on how public health lock-down measures have affected mental health and household incomes** can help **officials plan how best to support communities once these measures are lifted**. Under the **COVID-19 Research Roadmap**, a research group in China is studying the lessons learned following the public health measures taken in that country.
  - **Second,** research **on health systems and models of care** in different regions will enable adaptation and efficiencies specific to the COVID-19 health care response. **Research in this area can help officials plan best approaches for managing patient flows and also provide the right support to those providing care**. A review of different **models of homecare is currently underway** to identify and share best methods **for low resource settings**. a research protocol guidance document and data collection tools have also been developed to **study the views of health workers on infection prevention and control procedures and on their well-being**. Research groups in different regions are implementing this study and are meeting regularly to share experiences, results and learning.
  - **Third,** research on the flows of information and misinformation, and on effective approaches for addressing stigma, will help science-based information and recommendations reach intended audiences. **Data-driven insights can help officials tackle the infodemic and implement strategies** to build trust. Research to define and prioritize vulnerable populations so that evidence can inform policy development which accounts for and meets their needs.
- The working group continues to collaborate with colleagues working on different technical areas and groups: **immunization, ethics, gender, maternal and child health, sexual and reproductive health, to name a few; informing social science evidence in the work of WHO.**
- A toolbox on good participatory practice for COVID-19 clinical trials and on working with Community Advisory Boards for COVID-19 related clinical studies is also now available

Epidemiology

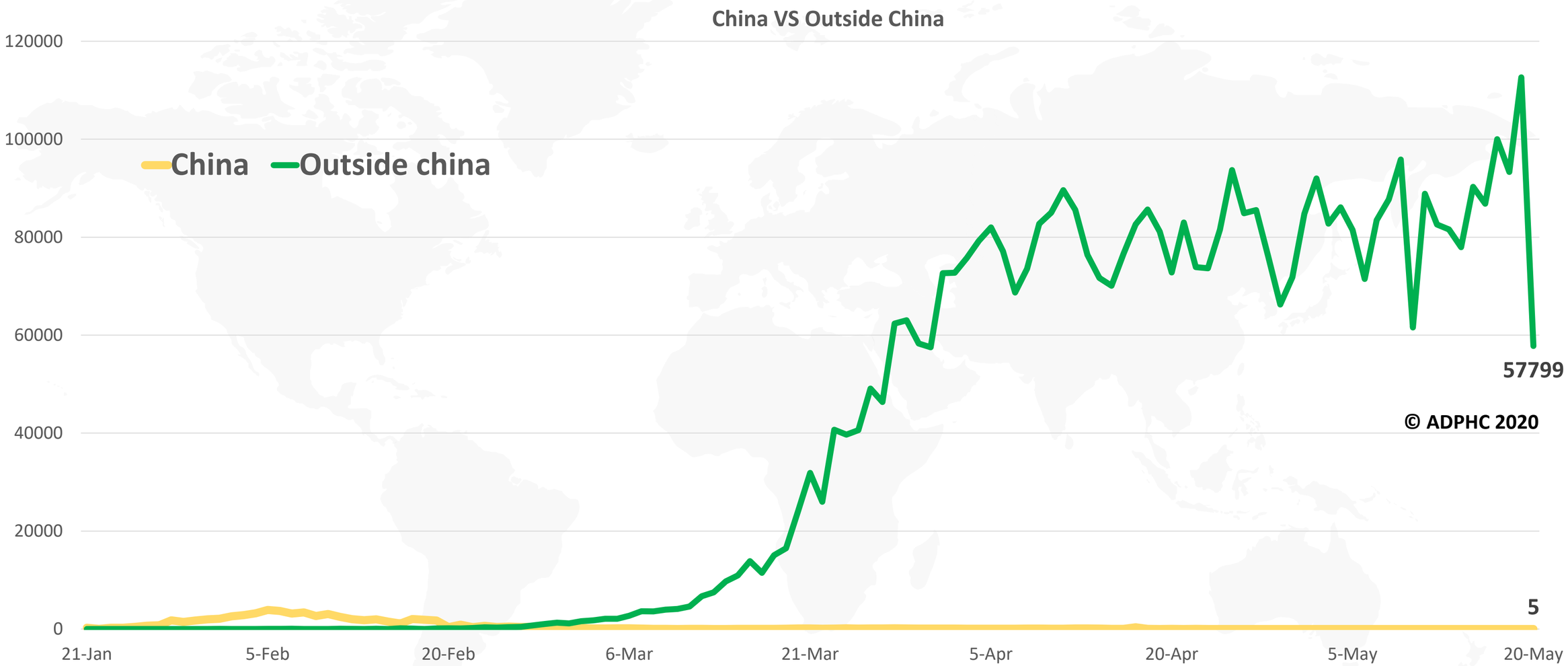
Figure 1: Total number of infected, recovered , and death cases (January 21st to May 20, 2020)



Line graph published by Abu Dhabi Public Health Center 2020.
Data resources: WHO, : John Hopkins University

Epidemiology

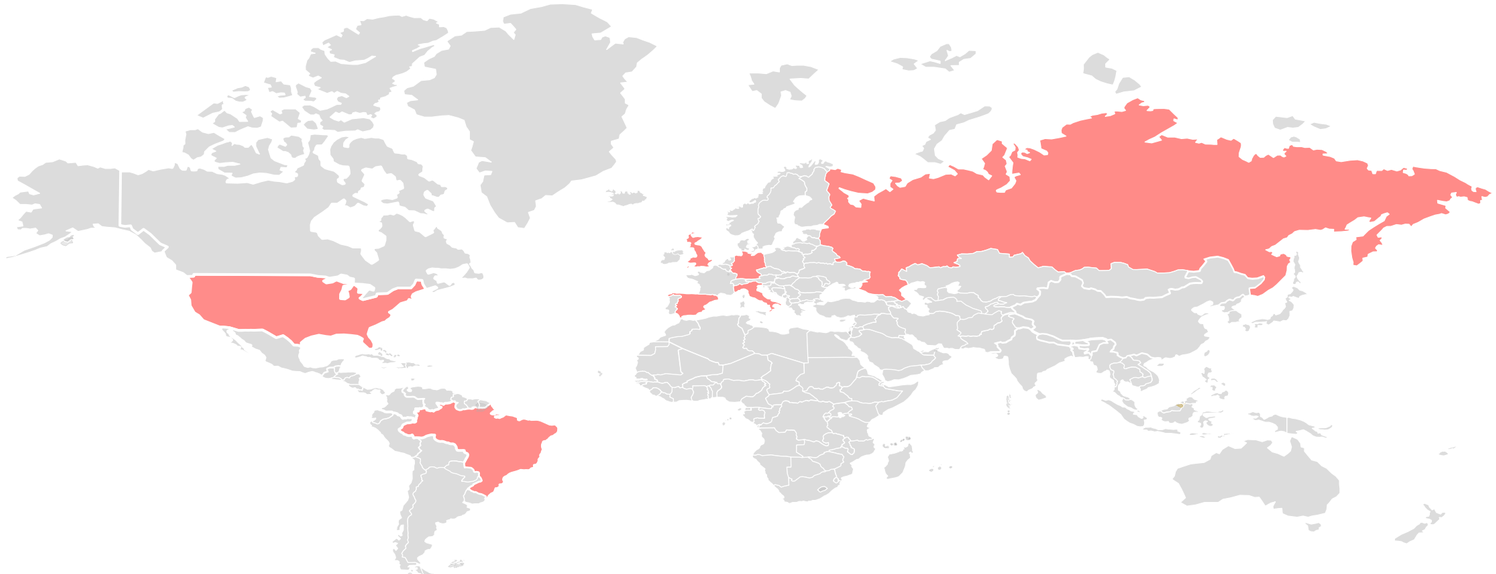
Figure 2: Daily new infected COVID-19 cases reported between (January 21 to May 20, 2020).

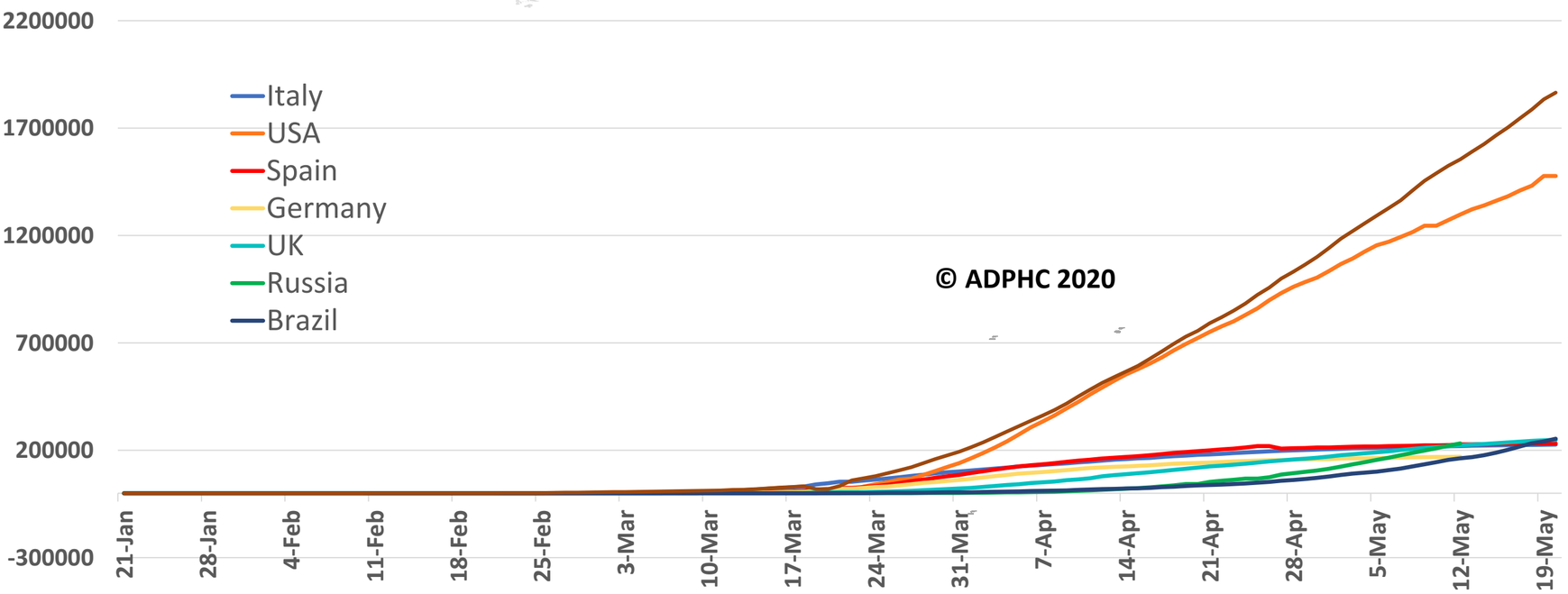


Line graph published by Abu Dhabi Public Health Center 2020.
Data resources: WHO

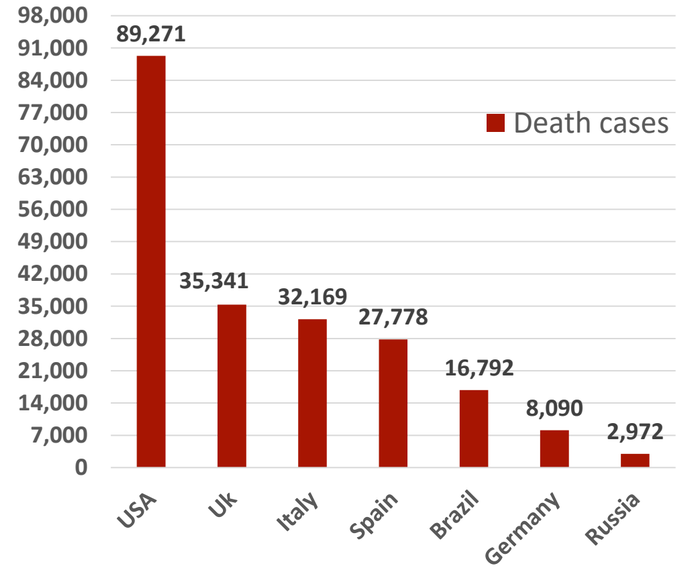
Epidemiology

Figure 3 : Top 7 countries in the total number of cases due to COVID-19 (January 21 to May 20, 2020).

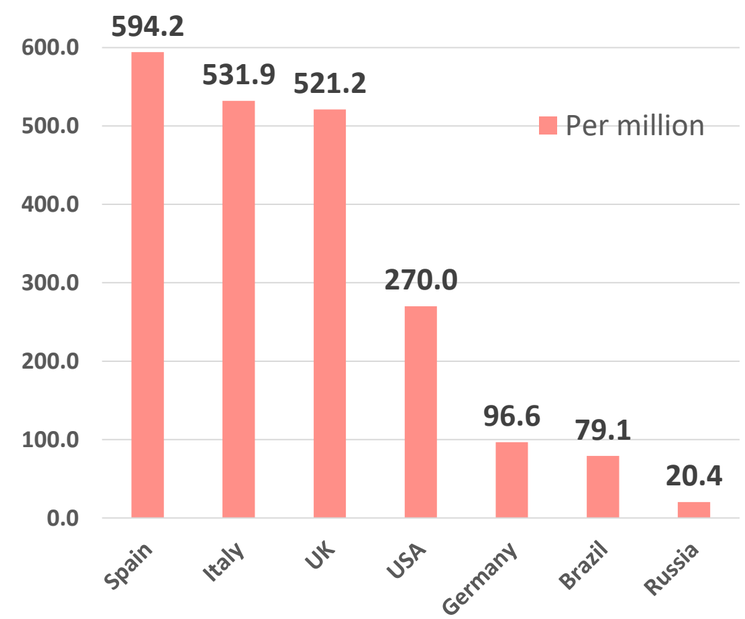




TOTAL DEATHS



DEATHS PER MILLION

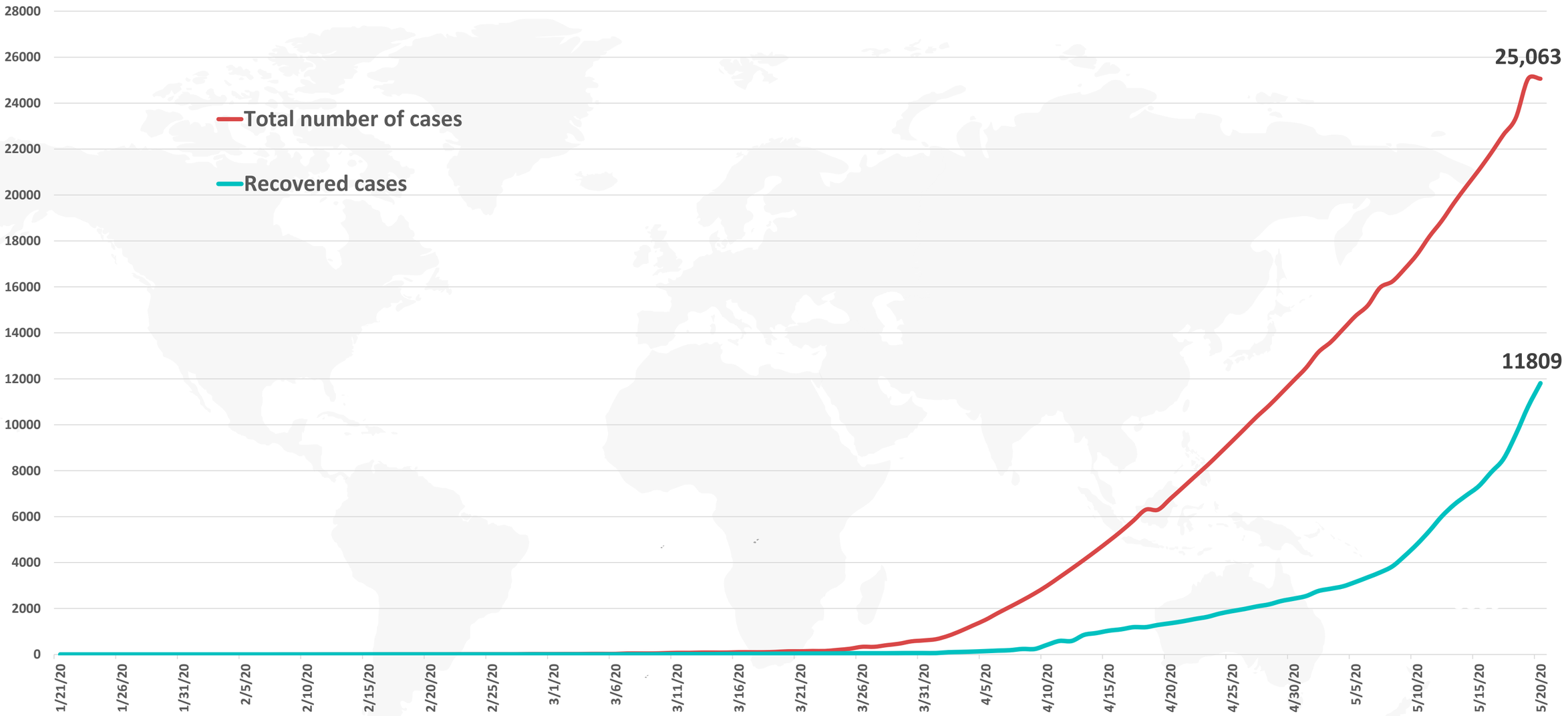


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

Epidemiology

Figure 4: Total number of COVID-19 infected and recovered cases in UAE over time

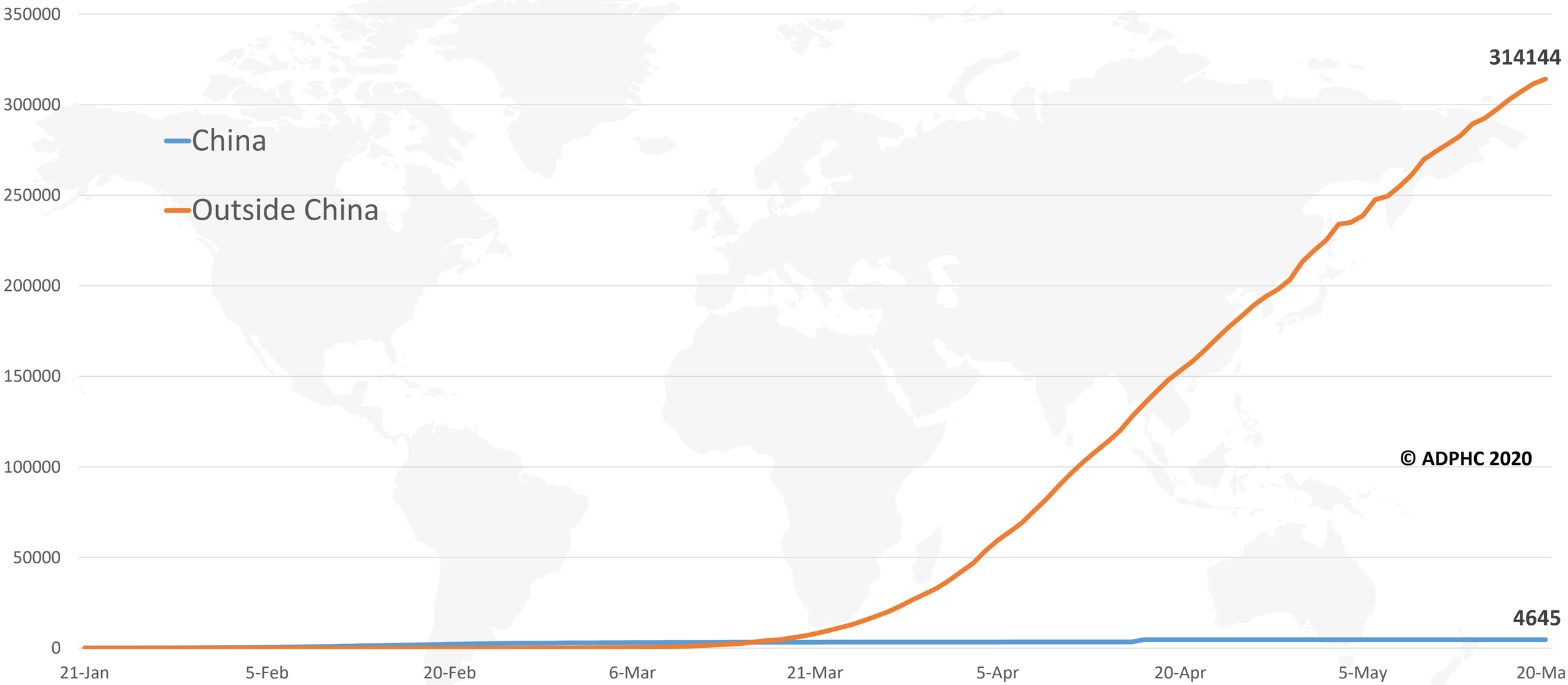


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO, : John Hopkins University

Epidemiology

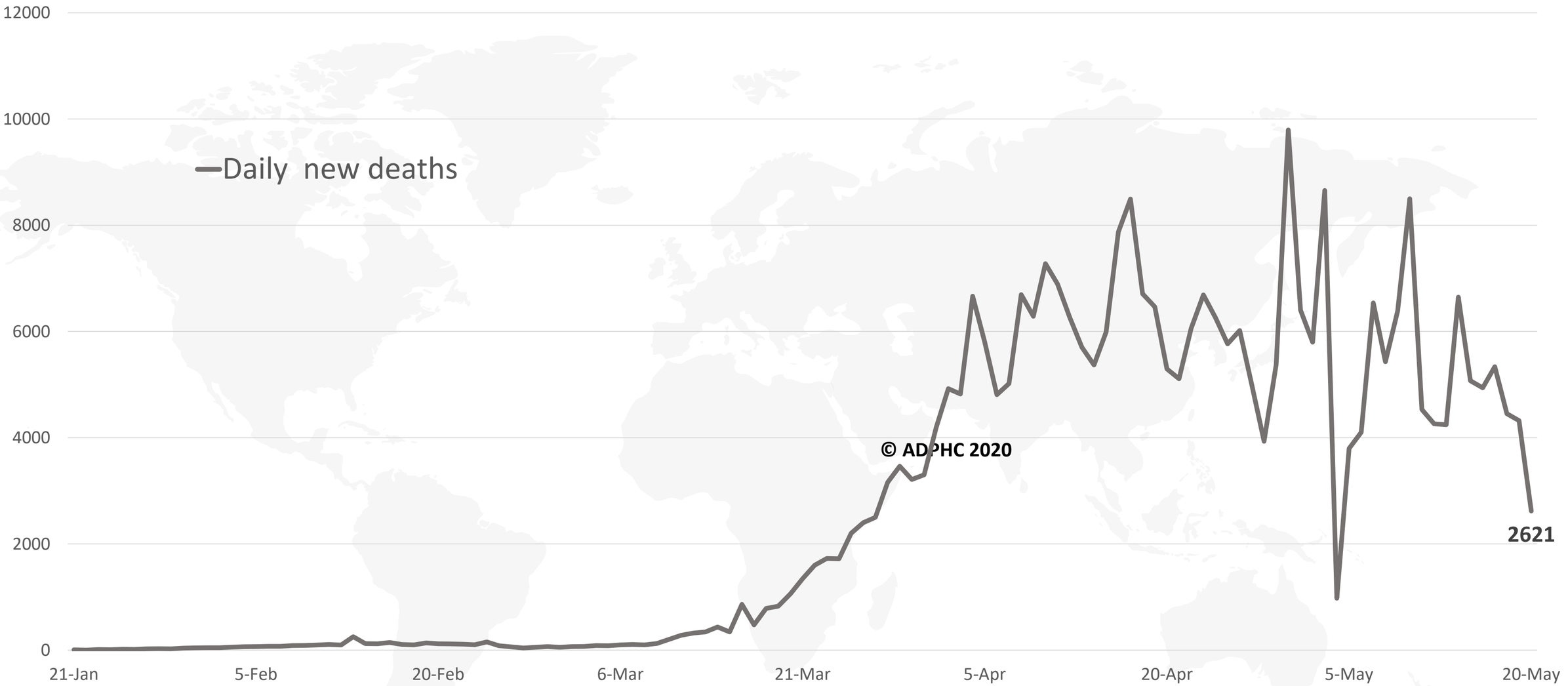
Figure 5: Total number of death due to COVID-19 reported by China and the rest of the world (January 22 to May 20, 2020).



Line graph published by Abu Dhabi Public Health Center 2020.
Data resources: WHO

Epidemiology

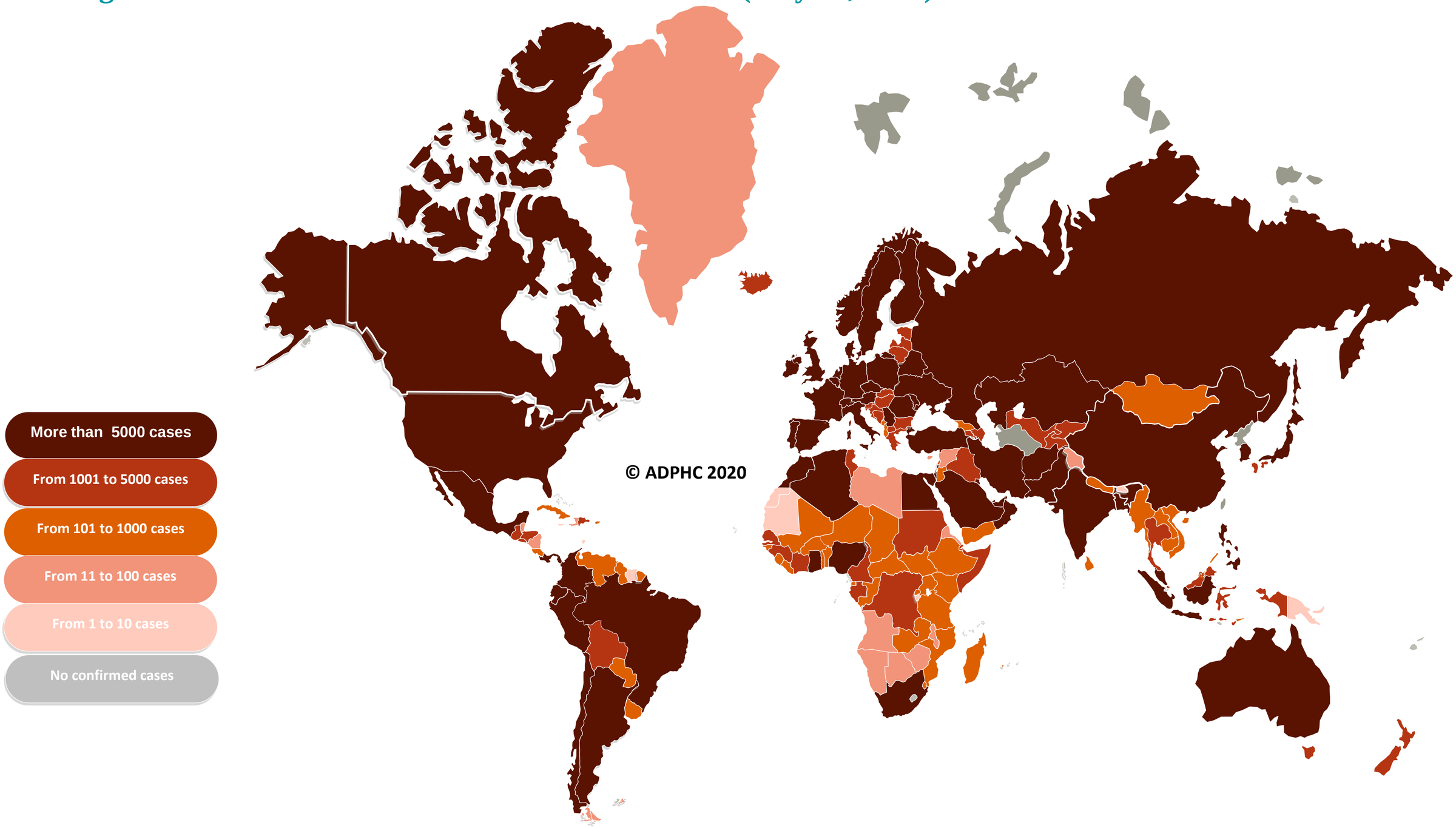
Figure 6: Global daily new deaths due to COVID-19 (January 22 to May 20, 2020).



Line graph published by Abu Dhabi Public Health Center 2020.
Data resources: WHO

Epidemiology

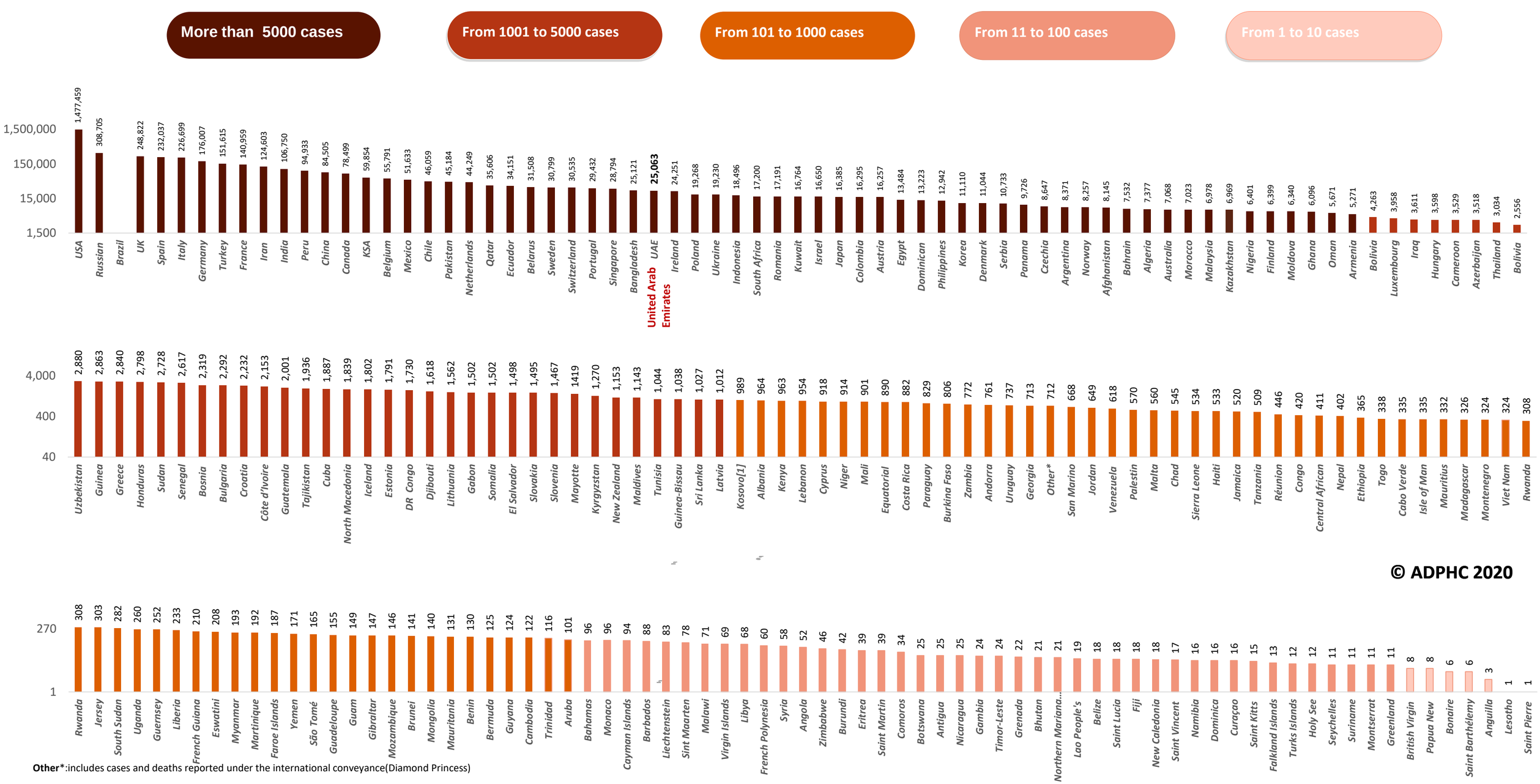
Figure 7a : Global distribution of COVID-19 cases (May 20, 2020).



Map chart published by Abu Dhabi Public Health Center 2020.

Epidemiology

Figure 7B: Bar chart illustrate the global distribution of COVID19 cases May 20, 2020)



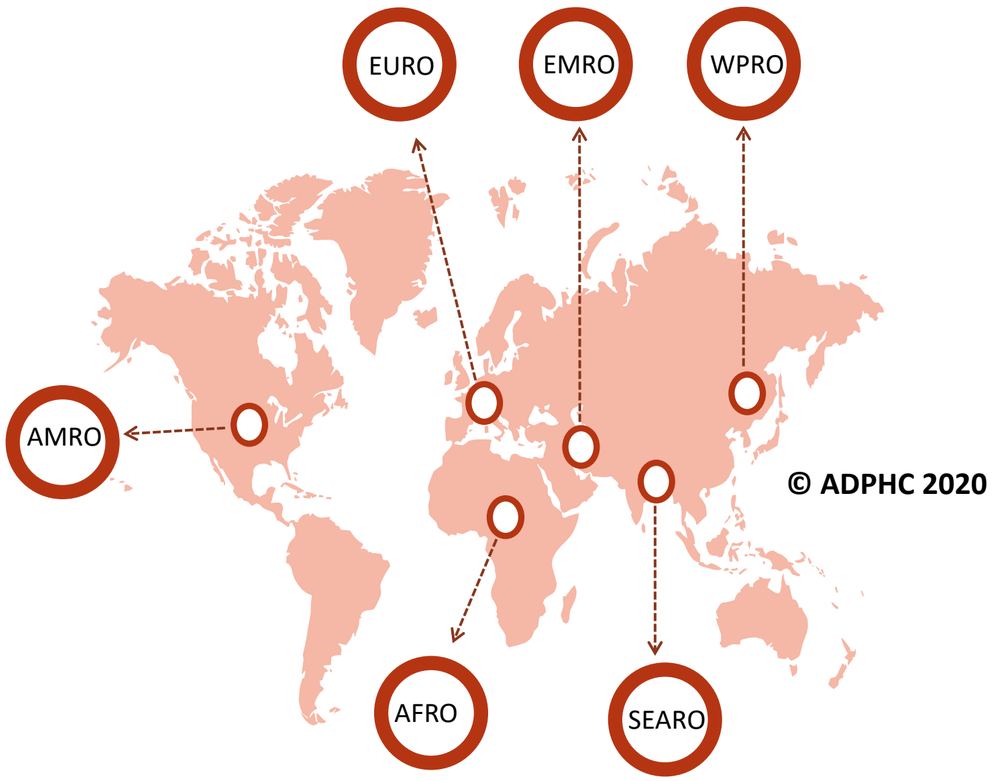
Other*:includes cases and deaths reported under the international conveyance(Diamond Princess)

Map chart published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

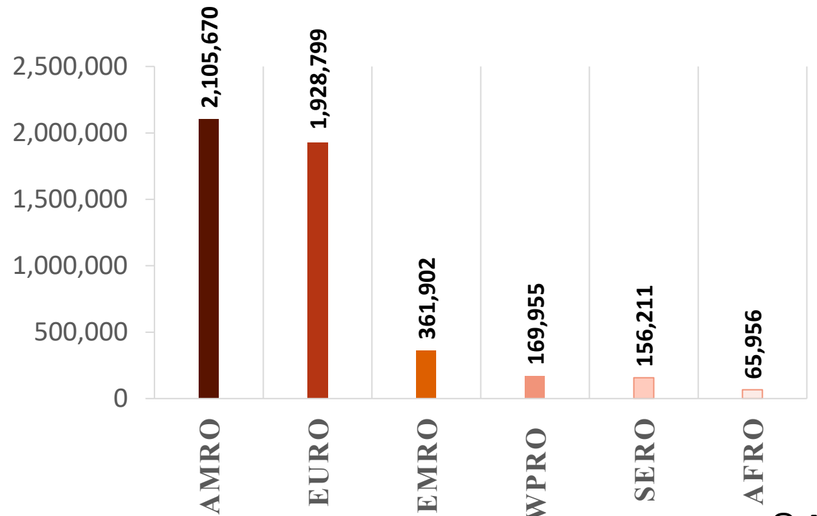
Epidemiology

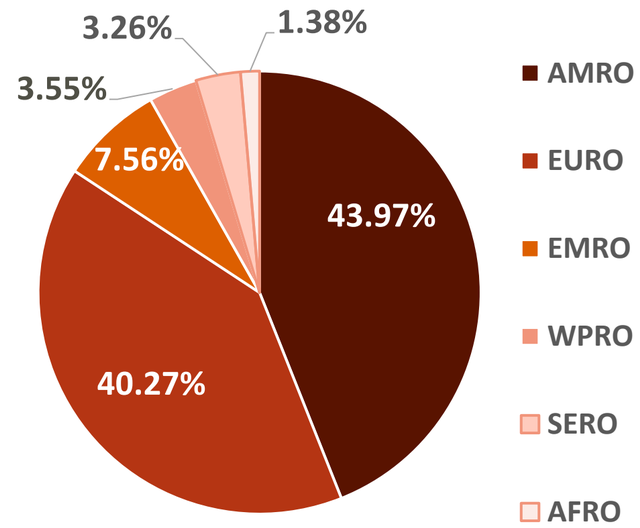
Figure 8: illustrate the Global distribution of COVID19 cases per region (May 20, 2020)



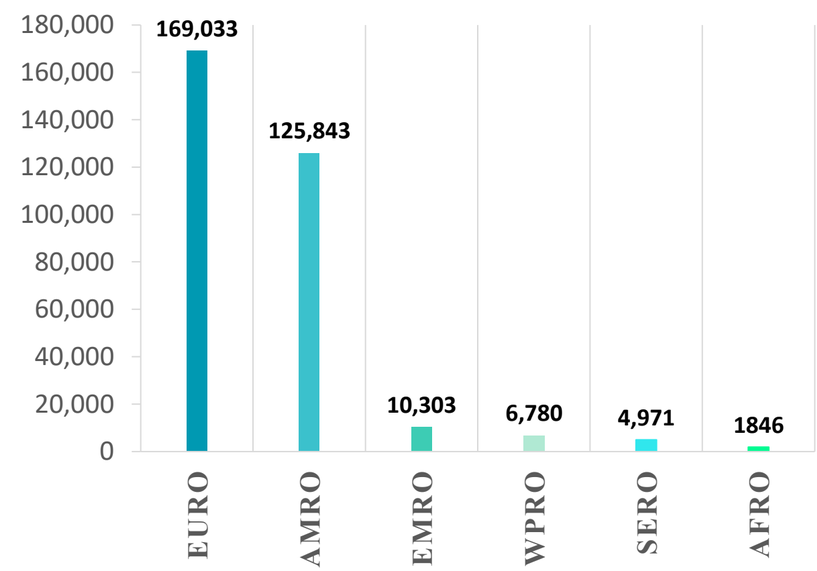
Map chart published by Abu Dhabi Public Health Center 2020.
Data resources: WHO

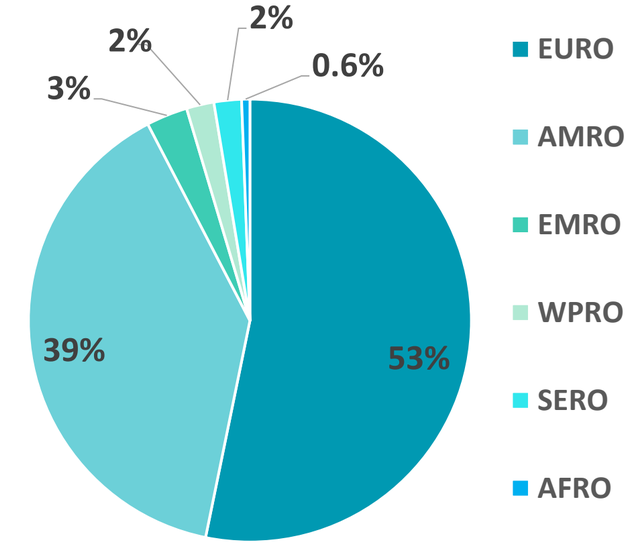
INFECTED





DEATH

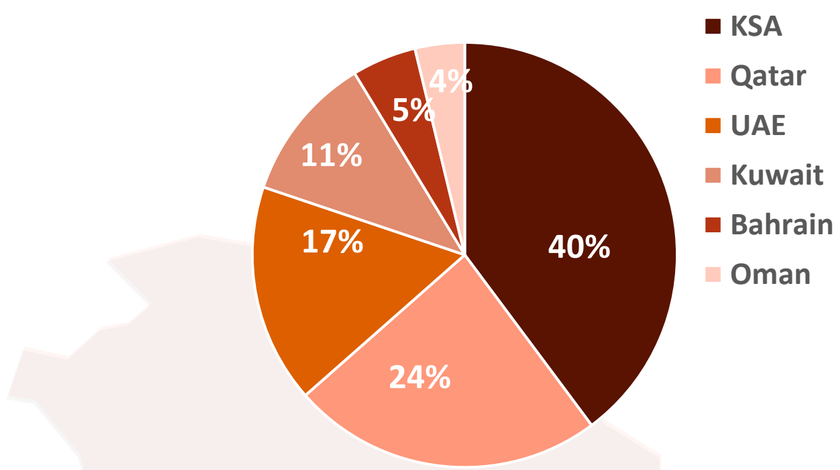


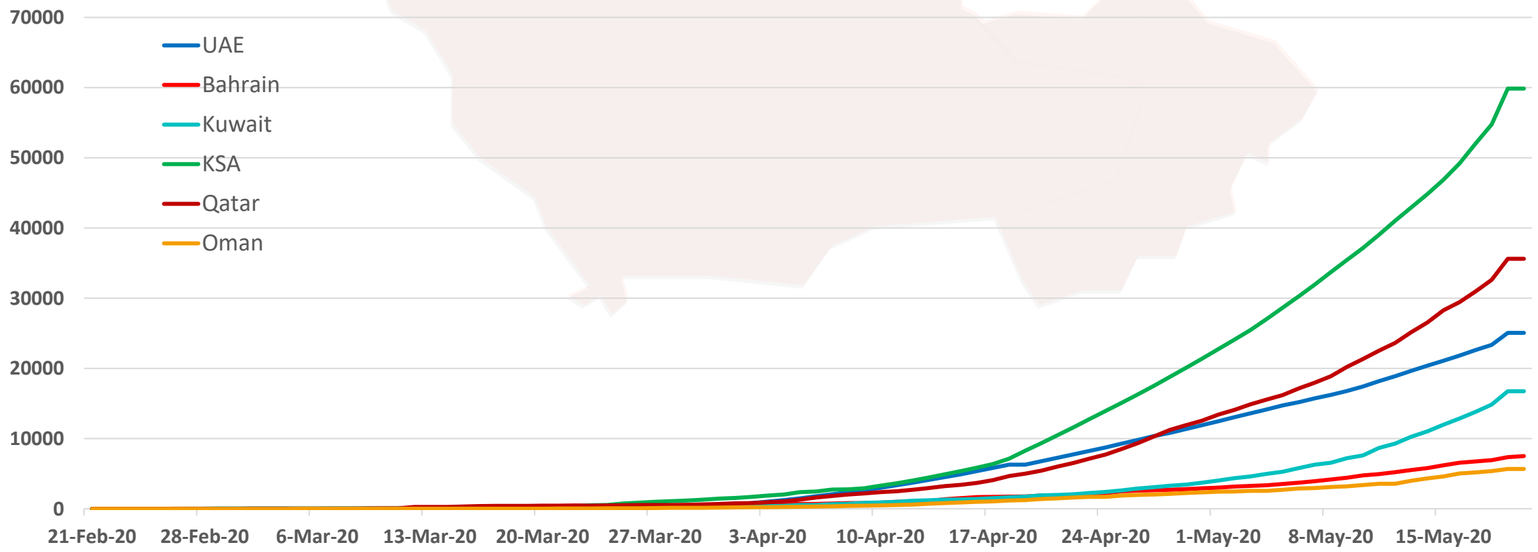


Epidemiology

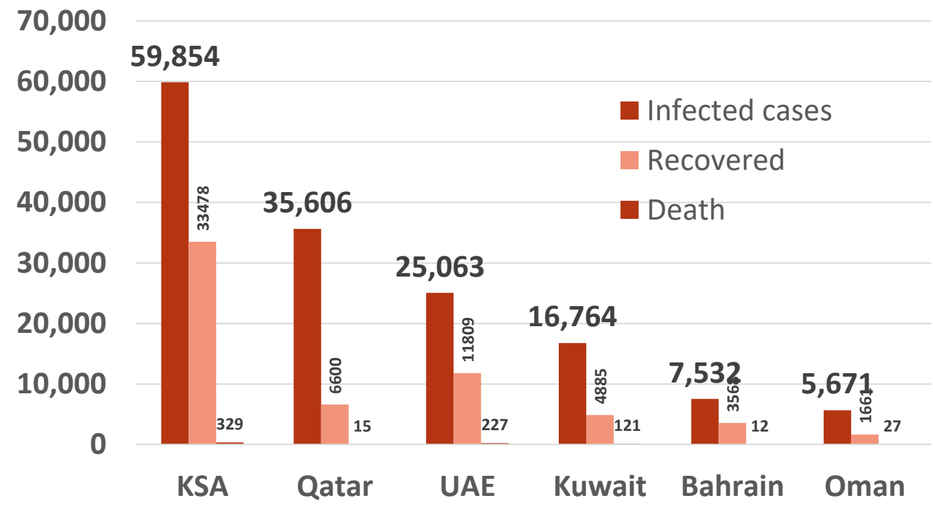
Figure 9: Comparative analysis of the distribution of COVID19 cases in GCC countries (May 20, 2020)

TOTAL NUMBER OF INFECTED CASES

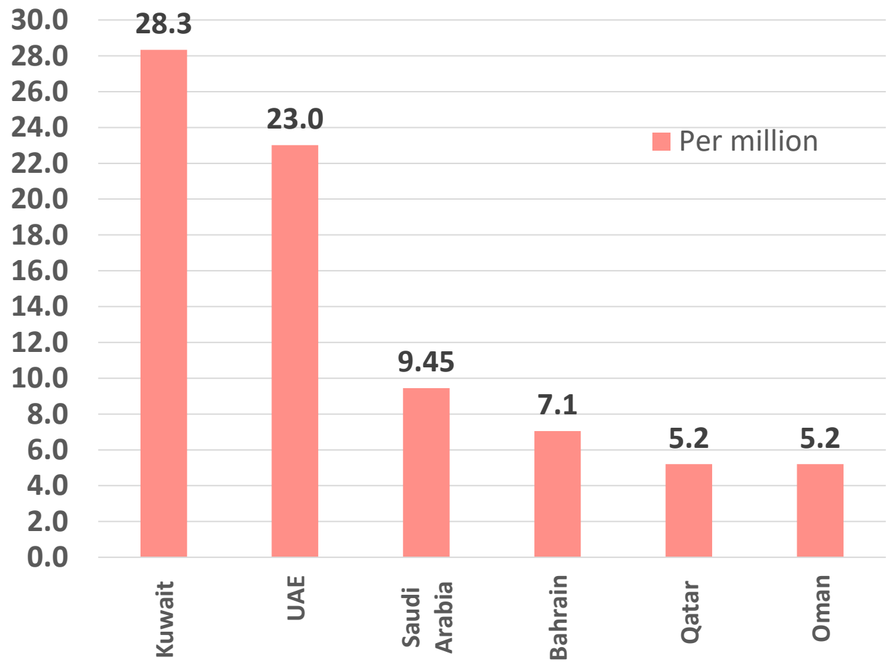




Total number of infected, recovered and Deaths



Death per million



charts published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

UAE Research

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Article 1: Whole genome sequencing and phylogenetic analysis of SARS-CoV-2 strains from the index and early patients with COVID-19 in Dubai, United Arab Emirates, 29 January to 18 March 2020 .

Authors:

Ahmad Abou Tayoun1, Tom Loney, Hamda Khansaheb, Sathishkumar Ramaswamy, Divinlal Harilal, Zulfa Omar Deesi, Rupa Murthy Varghese, Hanan Al Suwaidi, Abdulmajeed Alkhajeh, Laila Mohamed AlDabal, Mohammed Uddin, Rifat Hamoudi, Rabih Halwani, Abiola Senok, Qutayba Hamid, Norbert Nowotny, Alawi Alsheikh-Ali. (Al jalila Hospital ,MBRU, Sharjah University and DHA.)

Published: May 15, 2020, in the biorxiv

Summary:

- 49 patients of the first earliest confirmed cases in the UAE were analyzed in this study. The time period of **29 January to 18 March 2020** was specifically selected to focus on **early SARS-CoV-2 viral introductions into the UAE**.
- Of the **49 COVID-19 patients in Dubai**, **22 had a travel history from Europe including Austria, France, Germany, Italy, Ireland, Norway, and the United Kingdom**. Nearly two-thirds (63.3%) of patients were male and 61.2% were aged between 20 and 44 years .
- **Majority of patients (88%) were asymptomatic** or **had mild symptoms** and only four required intensive care with invasive ventilation.
- Only 25 patient samples were used for phylogenetic analysis.
- They identified **70 variants relative** to the reference GenBank SARS-CoV-2
- **17 out of the 70 variants were novel as they were not identified in the Chinese National Center for Bioinformation Database**
- The findings suggest multiple independent spatiotemporal introductions of SARS-CoV-2 into the UAE **from Asia, Europe, and the Middle East**
- The majority of **introductions (78%)** were from **Iran and Europe** during two different time frames (mid-late February and early March, respectively).
- They show evidence for possible local transmission within the Middle Eastern/Iranian isolates, it will be important to sequence further isolates at subsequent dates to determine whether these introductions succeeded in seeding more clustering and whether such clustering was affected by proactive and vigilant public health measures

Article 1: Cont.,

Summary:

Table1: showed details on the cases , further information in the result of 49 patients' area available in the link

Study ID	Age (years)	Sex	Nationality	Resident /Tourist	Travel History	Symptom Onset Date 2020‡	Severity	Self-Reported History Fever/Cough	ICU Admission/ Ventilator	Full Genome Sequence	GISAID Accession ID
L8156	63	Female	China	Tourist	Wuhan, China	09 Jan	Asymp/Mild	No/Yes	No/No	No	-
L8497	38	Female	China	Tourist	Wuhan, China	24 Jan	Asymp/Mild	Yes/No	No/No	No	-
L5630*	9	Male	China	Tourist	Wuhan, China	28 Jan	Asymp/Mild	No/No	No/No	Yes	EPI_ISL_435137
L8205	36	Male	China	Resident	Wuhan, China	28 Jan	Asymp/Mild	No/No	No/No	No	-
L0826	42	Male	Philippines	Resident	None/Contact with positive case	22 Jan	Severe/Critical	Yes/Yes	Yes/Yes	No	-
L4280	36	Male	India	Resident	None/Contact with positive case	08 Feb	Asymp/Mild	No/No	No/No	Yes	EPI_ISL_435134
L3715	34	Male	Philippines	Resident	None/Contact with positive case	16 Feb	Asymp/Mild	No/No	No/No	No	-
L2771	25	Male	Sri Lanka	Resident	None/Contact with positive case	16 Feb	Asymp/Mild	No/No	No/No	No	-
L8480	21	Male	Sri Lanka	Resident	None/Contact with positive case	16 Feb	Asymp/Mild	No/No	No/No	No	-
L8386	70	Male	Iran	Tourist	Iran	17 Feb	Severe/Critical	No/Yes	Yes/Yes	No	-
L6599	41	Male	Pakistan	Resident	None/Contact with positive case	21 Feb	Asymp/Mild	No/No	No/No	Yes	EPI_ISL_435138
L0904	35	Male	Iran	Tourist	Iran	21 Feb	Asymp/Mild	Yes/Yes	No/No	Yes	EPI_ISL_435126
L6867	60	Female	Iran	Tourist	Iran	22 Feb	Asymp/Mild	No/Yes	No/No	No	-
L2409	59	Male	Iran	Tourist	Iran	23 Feb	Asymp/Mild	Yes/No	No/No	Yes	EPI_ISL_435131
L0184	64	Female	Iran	Tourist	Iran	23 Feb	Asymp/Mild	Yes/Yes	No/No	Yes	EPI_ISL_435121

Article 2: Asymptomatic Seroconversion of Immunoglobulins to SARS-CoV-2 in a Pediatric Dialysis Unit

Published: May 14 2020 in the JAMA

Summary

- The study describes SARS-CoV-2 seroconversion in patients and health care workers in a pediatric dialysis unit at Riley Hospital for Children, Indianapolis, Indiana.
- The serial SARS-CoV-2 antibody levels were measured in **patients, nurses, physicians, and staff** in isolation room pediatric hemodialysis unit.
- All **health care workers and patients** had temperature and symptoms of COVID-19 **screened before entry** as well as wore surgical masks.
- One of the **dialyzed patients** had **positive RT-PCR for SARS-CoV-2** (on days 7, 14, and 19) **one week before the study began on March 25, 2020 (day 0)**. Positive seroconversion considered if IgM or IgG were positive using SARS-CoV-2 ELISAs.

Results (Table and Figure)

- The study serologically tested 13 patients (9 dialysis nurses, 2 nurse practitioners, 4 staff, and 10 physicians)
- Only two symptomatic (upper respiratory tract symptoms) health care workers had negative PCR test results between day 0 and day 7. One patient of them seroconverted on day 21 despite 3 negative PCR results.
- All other tested health care workers **had NO nasopharyngeal testing or symptomatology consistent with COVID-19** before day 7.
- By day 21, 11 of 25 health care workers (44%) and 3 of 13 patients (23%) had positive SARS-CoV-2 antibodies.
- None of the health care workers developed symptoms between days 7 and 21.
- None of the health care workers who directly cared for the PCR positive patient seroconverted.
- Two of 11 health care workers who cared for two patients with subclinical seroconversion developed SARS-CoV-2 antibodies. Both health care workers remained asymptomatic, but one had a positive result on a nasopharyngeal PCR test obtained because of IgM seroconversion.

Diagnosis :

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Article 2: Cont.

Table. Characteristics and Cumulative SARS-CoV-2 Seroconversion for Patients Receiving Dialysis and Health Care Workers

Characteristic	No. (%)	
	Patients (n = 13)	Health care workers (n = 25)[a]
Age, median (range), y	13 (2-16)	40.5 (25-61)
Male sex	9 (69)	3 (12)
Serostatus by week 3		
IgM+	2 (15)	7 (28)
IgG+	3 (23)	4 (16)
IgM+ or IgG+	3 (23)	11 (44)
COVID-19–like symptoms	1 (8)	2 (8)
Positive PCR (symptomatic)[b]	1 (100)	0
Asymptomatic IgM positive	1 (8)	4 (16)
Positive PCR (asymptomatic)[c]	0	1 (25)

Abbreviations: COVID-19, coronavirus disease 2019; PCR, polymerase chain reaction; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2.

[a] Health care workers include 9 dialysis nurses, 2 nurse practitioners, 4 staff, and 10 physicians.

[b] PCR testing was performed on patients or health care workers with COVID-19–like symptoms (n = 3).

[c] PCR testing was performed on asymptomatic patients or health care workers with IgM and no IgG (n = 5).

Discussion

- A high prevalence of subclinical seroconversion to COVID-19 in individuals interacting in a pediatric dialysis unit was observed.
- The prevalence of subclinical seroconversion to COVID-19 in the health care workers suggests that more health care workers may be antibody-positive than would otherwise be expected.

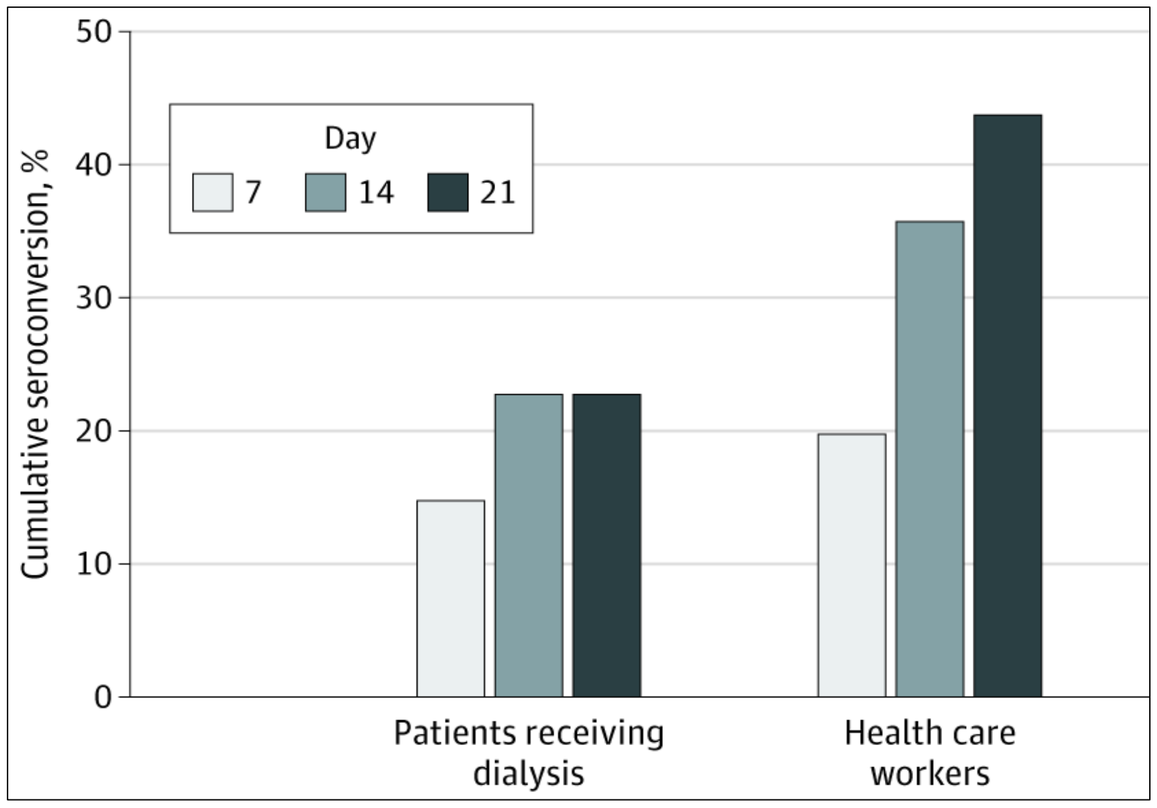

Figure. Cumulative Seroconversion (Development of SARS-CoV-2 IgM or IgG Antibodies) Rates by Week of Study in Patients Receiving Dialysis and Health Care Workers

Article 3: Prevalence of obesity among adult inpatients with COVID-19 in France
Published: May 18, 2020, in the lancet

Summary:

- A cohort study aim to assess the prevalence of obesity, as defined by BMI of at least 30 kg/m2, among patients requiring hospitalization for severe COVID-19, including those with critical COVID-19 admitted to an ICU.
- **Study participant: 340 patients with confirmed, severe COVID-19** were included in the study from lyon hospital . Among which 230 (68%) patients with non-critical COVID-19 and 110 (32%) patients with critical COVID-19.In addition to 306 with non covid19 in Lille hospital and 124 critical with COVID19.
- **Our retrospective non-COVID-19 ICU comparison group** included **1210 patients with BMI values admitted** to ICU units in Lyon University Hospital on March 27 each year **between 2007 and 2019** .

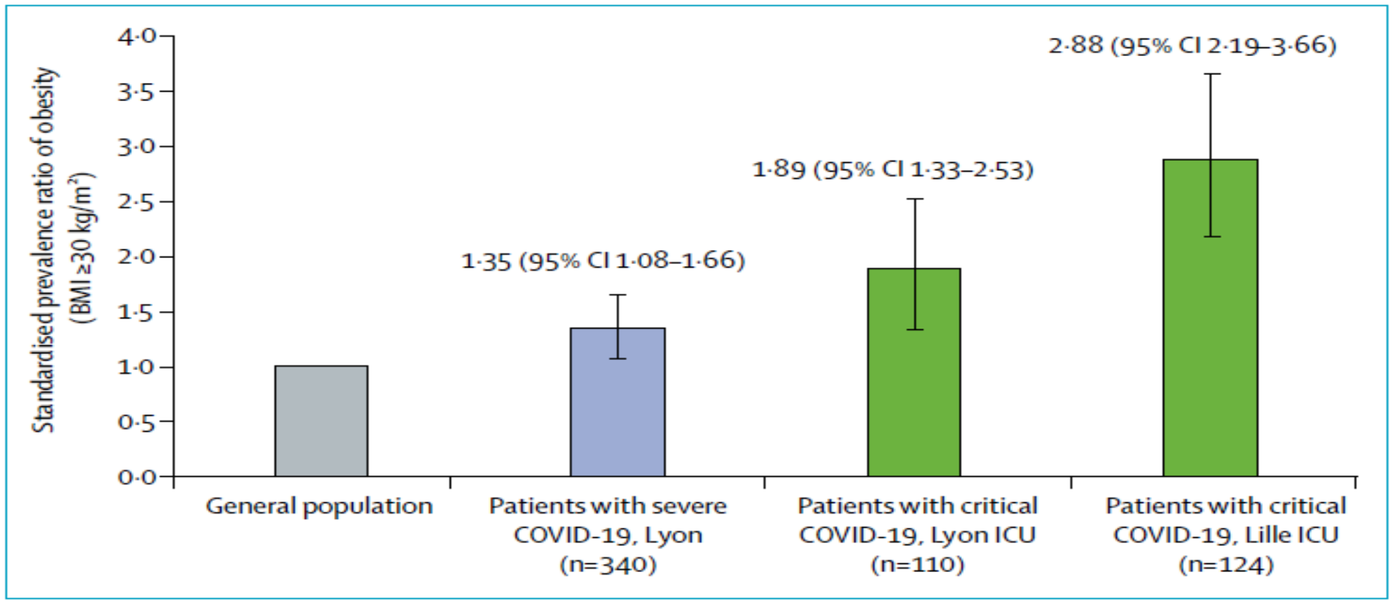

Figure 1: **Prevalence of obesity in patients with severe COVID-19 compared with the general population**

Clinical Feature and transmission

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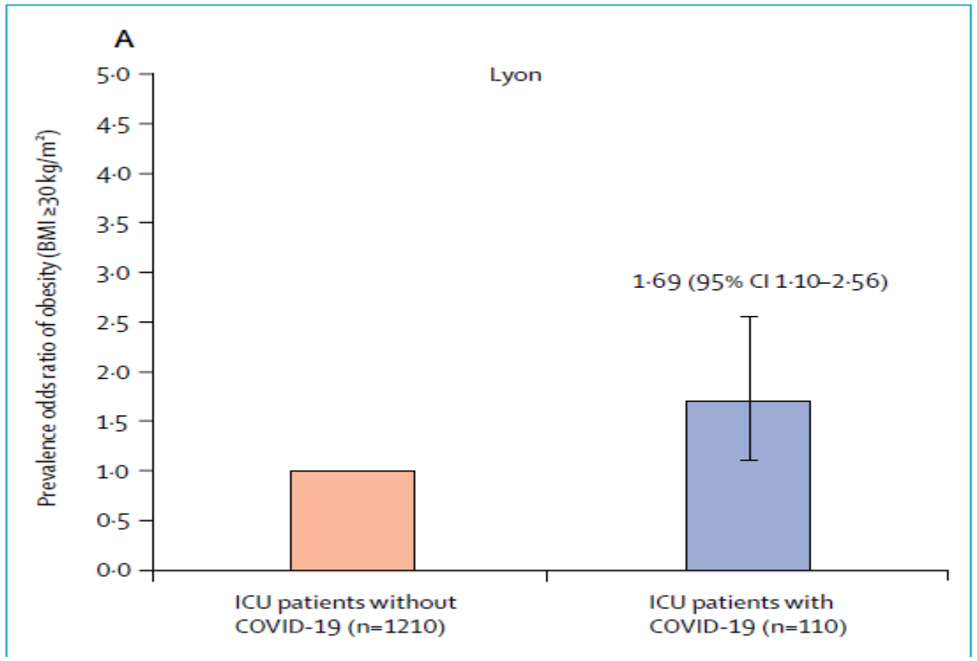
Article 3: Cont.,

Finding:

- This study reports **a significant association between the prevalence of obesity and severe COVID-19**, including critical COVID-19, and suggests that **obesity might be a risk factor of pejorative evolution of COVID-19, increasing the risk of ICU admission.**
- **Preliminary analyses from Lille** University Hospital, using the same cohort of patients, have also reported a **higher prevalence of invasive mechanical intubation in male patients and those with higher BMI**, especially at least 35 kg/m2 in ICU patients with COVID-19.



- Whether these observations were influenced by a **higher prevalence of obesity in these populations or important confounding factors such age and sex was not clear**.
- This study helps to fill this gap in knowledge by providing evidence of a higher prevalence of obesity among patients with severe COVID-19, especially those admitted to the ICU.
- These findings can help clinicians to better identify specific populations with higher risk of severe disease, which could lead to an increase in protective measures, proposal of serological screening for immunization, and recommendation of a vaccination once available for people with obesity.