

Review

Corona Virus: A Review of COVID-19

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Abstract

Corona virus causes respiratory infection including pneumonia, cold, sneezing and coughing while in animal it causes diarrhea and upper respiratory diseases. Corona virus transmitted human to human or human to animal via airborne droplets. Corona virus enters in human cell through membrane ACE-2 exopeptidase receptor. WHO and ECDC advised to avoid public place and close contact to infected persons and pet animals. Firstly Corona virus (2019-nCoV) was isolated from Wuhan market China at 7 Jan. 2020.

Keywords: Corona virus, COVID-19, MERS-CoV, SARS-CoV, Wuhan

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History and Origin

First case of corona virus was notified as cold in 1960. According to the Canadian study 2001, approximately 500 patients were identified as Flu-like system. 17-18 cases of them were confirmed as infected with corona virus strain by polymerase chain reaction. Corona was treated as simple non fatal virus till 2002. In 2003, various reports published with the proofs of spreading the corona to many countries such as United States America, Hong Kong, Singapore, Thailand, Vietnam and in Taiwan. Several case of severe acute respiratory syndrome caused by corona and their mortality more than 1000 patient was reported in 2003. This was the black year for microbiologist. When microbiologist was started focus to understand these problems. After a deep exercise they conclude and understand the pathogenesis of disease and discovered as corona virus. But till total 8096 patient was confirmed as infected with corona virus. So in 2004, World health organization and centers for disease control and prevention declared as “state emergency”. Another study report of Hong Kong was confirmed 50 patient of severe acute respiratory syndrome while 30

of them were confirmed as corona virus infected. In 2012, Saudi Arabian reports were presented several infected patient and deaths.^[1–4] COVID-19 was first identified and isolated from pneumonia patient belongs to Wuhan, china.^[5–6]

Microbiology

Corona virus is spherical or pleomorphic, single stranded, enveloped RNA and covered with club shaped glycoprotein. Corona viruses are four sub types such as alpha, beta, gamma and delta corona virus. Each of sub type corona viruses has many serotypes. Some of them were affect human of other affected animals such as pigs, birds, cats, mice and dogs.^[7–11]

Mode of Spreading

Peoples can get the infection through close contact with a person who has symptoms from the virus includes cough and sneezing. Generally corona virus was spread via airborne zoonotic droplets. Virus was replicated in ciliated epithelium that caused cellular damage and infection at infection site. According to a study published in 2019, An-

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giotensin converting enzyme 2 (ACE.2), a membrane exopeptidase in the receptor used by corona virus in entry to human cells.^[12–14] Virus transmission routes were represented in figure 1 and 2.

Characteristics

According to a report published on 24 Jan 2020, corona virus infected patient have many common features such as fever, cough, and fatigue while diarrhea and dyspnea were found to be as uncommon feature. Many of them patient reported bilateral abnormalities. Corona virus was isolated from bronchoalveolar lavage fluid in china in 2020. It is also detected in blood samples. Till now, corona virus was not confirmed in feces and urine sample of patient.^[15–17]

Prevention

There is nothing to provide complete guidance to prevent from corona virus but some guidelines was presented by WHO and ECDC. Basically these guidelines are for health

profession to set during the caring of infected patient. Because many evidence was presented by studies about human to human transmission of corona from Wuhan, china. Another study reported about airborne transmission of virus while no one was presents the solid evidence. As the lack of transmission evidence health professionals were not able to present prevention guidelines. According to WHO, some general guidelines were published such as separate the infected patient from other family member to single room, implementation of contact and droplet precaution, airborne precaution etc. European Centre for Disease Prevention and Control (ECDC) also published the information leaflet to peoples i.e. Avoid contact with sick people, in particular those with a cough. Avoid visiting markets and places where live or dead animals are handled, Wash your hands with soap and water or use an alcohol based disinfectant solution before eating, after using the toilet and after any contact with animals, Avoid contact with animals, their excretions or droppings.^[18–19]

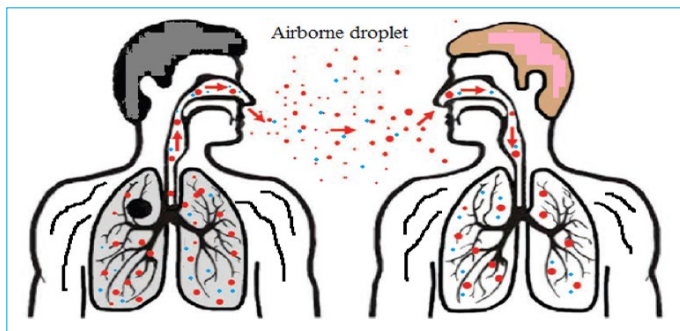


Figure 1. Trasnission of corona virus via airborne droplets.

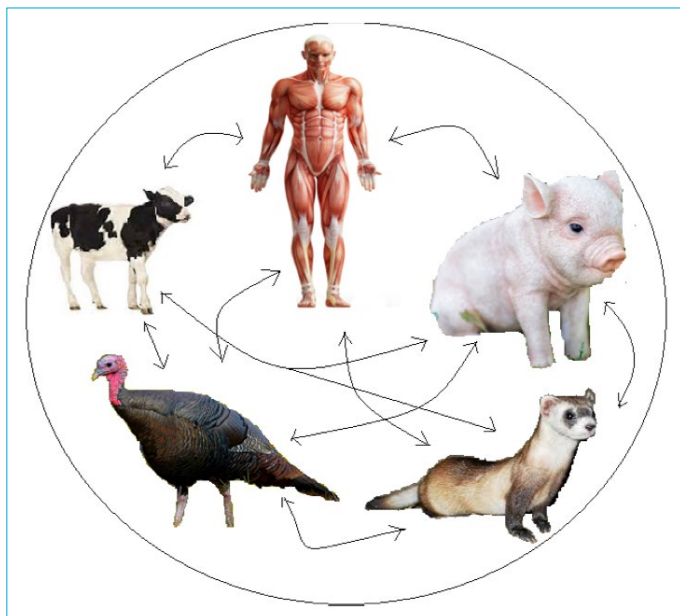


Figure 2. Corona virus targets.

Management and Vaccination

There is no special vaccine for this yet. Only supportive therapy is the treatment strategy followed by health professionals. Supportive therapy includes administration of antipyretic and analgesic, maintenance of hydration, mechanical ventilation as respiratory support and uses of antibiotic in bacterial infections. Some research studies claimed that ribavirin and interferon alpha have offered

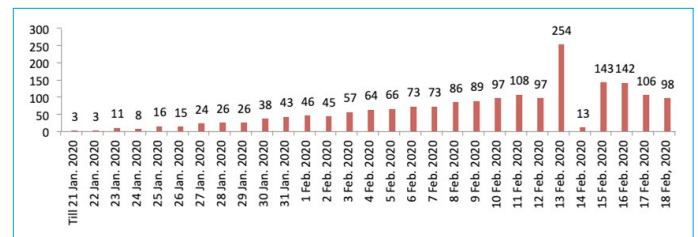


Figure 3. Date wise graphical representation of CoV-2019 death.

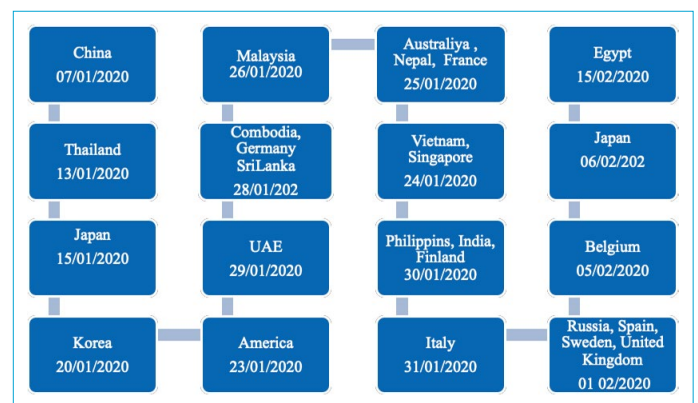


Figure 4. Spreading history of 2019-nCoV.

synergetic effect in early stage. While other studies reported mycophenolic acid as monotherapy. Still health professionals were not fully satisfied with any therapy so further clinical research needed.^[20–25]

CoV-2019 Confirmed Cases Report (Date & Country wise)

Spreading History of 2019-nCoV

On 31 Dec. 2019, China, East Asia, most populated country in world was informed to WHO regarding pneumonia cases with unknown etiology. Till 3 Jan. 2020 a total of 44 pneumonia cases were detected. On 7 Jan 2020, Chinese research authorities were announced that they were isolated new virus from sea food market in Wuhan city; Named as 2019-nCoV. On 13 Jan. 2020 Ministry of public health Thailand were reported 01 patient imported from Wuhan, China. On 15 Jan. 2020, the ministry of health, labor and welfare Japan were reported first case imported from Wuhan China. On 20 Jan. 2020, National IHR Focal point from the Korea was reported first case 2019-nCoV in Korea. On 23 Jan. 2020, United State of America were confirmed first case of 2019-nCoV in America. On 24 Jan. 2020, Vietnam has reported First case of 2019-nCoV with not travel history from China, while his family member was the China traveler. So it's the first incidence of human to human transmission of corona virus. On 24 Jan. 2020, the government of Singapore was confirmed First case of 2019-nCoV. On 25 Jan. 2020, the government of Australia, federal democratic republic of Nepal and French republic were confirmed first of 2019-nCoV. Other countries also were detected and reported the cases of 2019-nCoV as On, 26 Jan. 2020 (Malaysia), 27 Jan. 2020 (Canada), 28 Jan. 2020 (Cambodia, Germany, Sri Lanka), 29 Jan. 2020 (United Arab Emirates), 30 Jan. 2020 (Philippines, India, Finland), 31 Jan. 2020 (Italy), 1 Feb. 2020 (Russian Federation, Spain, Sweden, United Kingdom), 5 Feb. 2020 (Belgium), 6 Feb. 2020 (Japan), 15 Feb. 2020 (Egypt).

Conclusion

Corona virus was spreading human to human to transmission by close contact via airborne droplets generating by coughing, sneezing, kissing and smooching. So avoid these activities with infected partners and family members. Corona virus may transmit through pet animals such as dog, cat, pig, cow, turkeys. So avoid contact and separate them if observed any infection activities like diarrhea, cold, fever. As per WHO and ECDC guideline avoid the contact with sick person and also avoid the market or public place as per possible. There are no anti corona virus vaccine to prevent

or treatment but some supporting therapy work. Future research needed to fight with corona virus. Till only 'Distance is rescue'.

Disclosures

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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Table 1. CoV-2019 confirmed cases report (date wise)

S. no.	Date	Country	Confirmed case (country wise)	Total case (worldwide)	Total Death (China + outside China)	Reference
1.	Till 21 Jan. 2020	China	278	282	03 + 00 (outside China)	26
		Japan	01			
		Korea	01			
		Thailand	02			
2.	22 Jan. 2020	China	310	314	06 + 00 (outside China)	27
		Japan	01			
		Korea	01			
		Thailand	02			
3.	23 Jan. 2020	China	569	576	17 + 00 (outside China)	28
		Japan	01			
		Korea	01			
		Thailand	04			
4.	24 Jan. 2020	U.S. America	01	841	25 + 00 (outside China)	29
		China	830			
		Japan	01			
		Korea	02			
		Viet Nam	02			
		Singapore	01			
		Thailand	04			
5.	25 Jan. 2020	U.S. America	01	1320	41 + 00 (outside China)	30
		China	1297			
		Japan	03			
		Korea	02			
		Viet Nam	02			
		Singapore	03			
		Australia	03			
		Thailand	04			
		Nepal	01			
		U.S. America	02			
		France	03			
6.	26 Jan. 2020	U.S. America	02	2014	56 + 00 (outside China)	31
		China	1985			
		Japan	03			
		Korea	02			
		Viet Nam	02			
		Singapore	04			
		Australia	04			
		Malaysia	03			
		Thailand	05			
		Nepal	01			
		U.S. America	02			
7.	27 Jan. 2020	France	03	2798	80+ 00 (outside China)	32
		China	2761			
		Japan	04			
		Korea	04			
		Viet Nam	02			
		Singapore	04			
		Australia	04			

Table 1. CONT.

S. no.	Date	Country	Confirmed case (country wise)	Total case (worldwide)	Total Death (China + outside China)	Reference
8.	28 Jan. 2020	Malaysia	04	4593	106+ 00 (outside China)	33
		Thailand	05			
		Nepal	01			
		U.S. America	05			
		Canada	01			
		France	03			
		China	4537			
		Japan	06			
		Korea	04			
		Viet Nam	02			
		Singapore	07			
		Australia	05			
		Malaysia	04			
		Cambodia	01			
		Thailand	14			
		Nepal	01			
		Sri Lanka	01			
U.S. America	05					
Canada	02					
France	03					
Germany	01					
9.	29 Jan. 2020	China	5997	6065	132+ 00 (outside China)	34
		Japan	07			
		Korea	04			
		Viet Nam	02			
		Singapore	07			
		Australia	07			
		Malaysia	04			
		Cambodia	01			
		Thailand	14			
		Nepal	01			
		Sri Lanka	01			
		U.S. America	05			
		Canada	03			
		France	04			
		Germany	04			
		United Arab Emirates	04			
		10.	30 Jan. 2020			
Japan	11					
Korea	04					
Viet Nam	02					
Singapore	10					
Australia	07					
Malaysia	07					
Cambodia	01					
Philippines	01					
Thailand	14					

Table 1. CONT.

S. no.	Date	Country	Confirmed case (country wise)	Total case (worldwide)	Total Death (China + outside China)	Reference
		Nepal	01			
		Sri Lanka	01			
		India	01			
		U.S. America	05			
		Canada	03			
		France	05			
		Finland	01			
		Germany	04			
		United Arab Emirates	04			
11.	31 Jan. 2020	China	9720	9826	213 + 00 (outside China)	36
		Japan	14			
		Korea	11			
		Viet Nam	05			
		Singapore	13			
		Australia	09			
		Malaysia	08			
		Cambodia	01			
		Philippines	01			
		Thailand	14			
		Nepal	01			
		Sri Lanka	01			
		India	01			
		U.S. America	06			
		Canada	03			
		France	06			
		Finland	01			
		Germany	05			
		Italy	02			
		United Arab Emirates	04			
12.	1 Feb. 2020	China	11821	11953	259 + 00 (outside China)	37
		Japan	17			
		Korea	12			
		Viet Nam	06			
		Singapore	16			
		Australia	12			
		Malaysia	08			
		Cambodia	01			
		Philippines	01			
		Thailand	19			
		Nepal	01			
		Sri Lanka	01			
		India	01			
		U.S. America	07			
		Canada	04			
		France	06			
		Finland	01			
		Germany	07			

Table 1. CONT.

S. no.	Date	Country	Confirmed case (country wise)	Total case (worldwide)	Total Death (China + outside China)	Reference
13.	2 Feb. 2020	Italy	02	14557	304+ 00 (outside China)	38
		Russian Federation	02			
		Spain	01			
		Sweden	01			
		United Kingdom	02			
		United Arab Emirates	04			
		China	14411			
		Japan	20			
		Korea	15			
		Viet Nam	07			
		Singapore	18			
		Australia	12			
		Malaysia	08			
		Cambodia	01			
		Philippines	02			
		Thailand	19			
		Nepal	01			
		Sri Lanka	01			
		India	02			
		U.S. America	08			
		Canada	04			
		France	06			
		Finland	01			
		Germany	08			
		Italy	02			
		Russian Federation	02			
		Spain	01			
Sweden	01					
United Kingdom	02					
United Arab Emirates	05					
14.	3 Feb. 2020	China	17238	17401	361+ 00 (outside China)	39
		Japan	20			
		Korea	15			
		Viet Nam	18			
		Singapore	18			
		Australia	12			
		Malaysia	08			
		Cambodia	01			
		Philippines	02			
		Thailand	19			
		Nepal	01			
		Sri Lanka	01			
		India	03			
		U.S. America	11			
		Canada	04			
		France	06			
		Finland	01			

Table 1. CONT.

S. no.	Date	Country	Confirmed case (country wise)	Total case (worldwide)	Total Death (China + outside China)	Reference
		Germany	10			
		Italy	02			
		Russian Federation	02			
		Spain	01			
		Sweden	01			
		United Kingdom	02			
		United Arab Emirates	05			
15.	4 Feb. 2020	China	20471	20630	425 + 00 (outside China)	40
		Japan	20			
		Korea	16			
		Viet Nam	09			
		Singapore	18			
		Australia	12			
		Malaysia	10			
		Cambodia	01			
		Philippines	02			
		Thailand	19			
		Nepal	01			
		Sri Lanka	01			
		India	01			
		U.S. America	11			
		Canada	04			
		France	06			
		Finland	01			
		Germany	12			
		Italy	02			
		Russian Federation	02			
		Spain	01			
		Sweden	01			
		United Kingdom	02			
		United Arab Emirates	05			
16.	5 Feb. 2020	China	24363	24554	491+ (01 outside china)	41
		Japan	33			
		Korea	18			
		Viet Nam	10			
		Singapore	24			
		Australia	13			
		Malaysia	10			
		Cambodia	01			
		Philippines	03			
		Thailand	25			
		Nepal	01			
		Sri Lanka	01			
		India	03			
		U.S. America	11			
		Canada	05			
		France	06			

Table 1. CONT.

S. no.	Date	Country	Confirmed case (country wise)	Total case (worldwide)	Total Death (China + outside China)	Reference
		Finland	01			
		Germany	12			
		Italy	02			
		Russian Federation	02			
		Spain	01			
		Sweden	01			
		United Kingdom	02			
		Belgium	01			
		United Arab Emirates	05			
17.	6 Feb. 2020	China	28060	28276	564 + (01 outside china)	42
		Singapore	28			
		Japan	25			
		Korea	23			
		Australia	14			
		Malaysia	12			
		Viet Nam	10			
		Philippines	03			
		Cambodia	01			
		Thailand	25			
		India	03			
		Nepal	01			
		Sri Lanka	01			
		U.S. America	12			
		Canada	05			
		Germany	12			
		France	06			
		Italy	02			
		Russian Federation	02			
		The United Kingdom	02			
		Belgium	01			
		Finland	01			
		Spain	01			
		Sweden	01			
		United Arab Emirates	05			
		Other Cases on an international conveyance (Japan)	20			
18.	7 Feb. 2020	China	31211	31481	637 + (01 outside china)	43
		Singapore	30			
		Japan	25			
		Korea	24			
		Australia	15			
		Malaysia	14			
		Viet Nam	12			
		Philippines	03			
		Cambodia	01			
		Thailand	25			

Table 1. CONT.

S. no.	Date	Country	Confirmed case (country wise)	Total case (worldwide)	Total Death (China + outside China)	Reference
		India	03			
		Nepal	01			
		Sri Lanka	01			
		U.S. America	12			
		Canada	07			
		Germany	13			
		France	06			
		Italy	03			
		The United Kingdom	03			
		Russian Federation	02			
		Belgium	01			
		Finland	01			
		Spain	01			
		Sweden	01			
		United Arab Emirates	05			
		Other International conveyance (Japan)	61			
19.	8 Feb. 2020	China	34598	34886	723 + (01 outside china)	44
		Singapore	33			
		Japan	25			
		Korea	24			
		Australia	15			
		Malaysia	15			
		Viet Nam	13			
		Philippines	03			
		Cambodia	01			
		Thailand	32			
		India	03			
		Nepal	01			
		Sri Lanka	01			
		U.S. America	12			
		Canada	07			
		Germany	14			
		France	06			
		Italy	03			
		The United Kingdom	03			
		Russian Federation	02			
		Belgium	01			
		Finland	01			
		Spain	01			
		Sweden	01			
		United Arab Emirates	07			
		Other International conveyance (Japan)	64			
20.	9 Feb. 2020	China	37251	37558	812 + (01 outside china)	45
		Singapore	40			
		Korea	27			

Table 1. CONT.

S. no.	Date	Country	Confirmed case (country wise)	Total case (worldwide)	Total Death (China + outside China)	Reference
		Japan	26			
		Malaysia	17			
		Australia	15			
		Viet Nam	14			
		Philippines	03			
		Cambodia	01			
		Thailand	32			
		India	03			
		Nepal	01			
		Sri Lanka	01			
		U.S. America	12			
		Canada	07			
		Germany	14			
		France	11			
		Italy	03			
		The United Kingdom	03			
		Russian Federation	02			
		Belgium	01			
		Finland	01			
		Spain	01			
		Sweden	01			
		United Arab Emirates	07			
		Other International conveyance (Japan)	64			
21.	10 Feb. 2020	China	40235	40554	909 + (01 outside china)	46
		Singapore	43			
		Korea	27			
		Japan	26			
		Malaysia	18			
		Australia	15			
		Viet Nam	14			
		Philippines	03			
		Cambodia	01			
		Thailand	32			
		India	03			
		Nepal	01			
		Sri Lanka	01			
		U.S. America	12			
		Canada	07			
		Germany	14			
		France	11			
		The United Kingdom	04			
		Italy	03			
		Russian Federation	02			
		Spain	02			
		Belgium	01			
		Finland	01			

Table 1. CONT.

S. no.	Date	Country	Confirmed case (country wise)	Total case (worldwide)	Total Death (China + outside China)	Reference
		Sweden	01			
		United Arab Emirates	07			
		Other International conveyance (Japan)	70			
22.	11 Feb. 2020	China	42708	43103	1017 + (01 outside china)	47
		Singapore	45			
		Korea	28			
		Japan	26			
		Malaysia	18			
		Australia	15			
		Viet Nam	15			
		Philippines	03			
		Cambodia	01			
		Thailand	33			
		India	03			
		Nepal	01			
		Sri Lanka	01			
		U.S. America	13			
		Canada	07			
		Germany	14			
		France	11			
		The United Kingdom	08			
		Italy	03			
		Russian Federation	02			
		Spain	02			
		Belgium	01			
		Finland	01			
		Sweden	01			
		United Arab Emirates	08			
		Other International conveyance (Japan)	135			
23.	12 Feb. 2020	China	44730	45171	1114 + (01 outside china)	48
		Singapore	47			
		Japan	28			
		Korea	28			
		Malaysia	18			
		Australia	15			
		Viet Nam	15			
		Philippines	03			
		Cambodia	01			
		Thailand	33			
		India	03			
		Nepal	01			
		Sri Lanka	01			
		U.S. America	13			
		Canada	07			
		Germany	16			

Table 1. CONT.

S. no.	Date	Country	Confirmed case (country wise)	Total case (worldwide)	Total Death (China + outside China)	Reference
		France	11			
		The United Kingdom	08			
		Italy	03			
		Russian Federation	02			
		Spain	02			
		Belgium	01			
		Finland	01			
		Sweden	01			
		United Arab Emirates	08			
		Other International conveyance (Japan)	175			
24.	13 Feb. 2020	China	46550	46997	1368 + (01 outside china)	49
		Singapore	50			
		Japan	29			
		Korea	28			
		Malaysia	18			
		Viet Nam	16			
		Australia	15			
		Philippines	03			
		Cambodia	01			
		Thailand	33			
		India	03			
		Nepal	01			
		Sri Lanka	01			
		U.S. America	14			
		Canada	07			
		Germany	16			
		France	11			
		The United Kingdom	09			
		Italy	03			
		Russian Federation	02			
		Spain	02			
		Belgium	01			
		Finland	01			
		Sweden	01			
		United Arab Emirates	08			
		Other International conveyance (Japan)	174			
25.	14 Feb. 2020	China	48548	49 053	1381 + (02 outside china)	50
		Singapore	58			
		Japan	33			
		Korea	28			
		Malaysia	19			
		Viet Nam	16			
		Australia	15			
		Philippines	03			
		Cambodia	01			

Table 1. CONT.

S. no.	Date	Country	Confirmed case (country wise)	Total case (worldwide)	Total Death (China + outside China)	Reference
		Thailand	33			
		India	03			
		Nepal	01			
		Sri Lanka	01			
		U.S. America	15			
		Canada	07			
		Germany	16			
		France	11			
		The United Kingdom	09			
		Italy	03			
		Russian Federation	02			
		Spain	02			
		Belgium	01			
		Finland	01			
		Sweden	01			
		United Arab Emirates	08			
		Other International conveyance (Japan)	218			
26.	15 Feb. 2020	China	50054	50580	1524 + (02 outside china)	51
		Singapore	67			
		Japan	41			
		Korea	28			
		Malaysia	21			
		Viet Nam	16			
		Australia	15			
		Philippines	03			
		Cambodia	01			
		Thailand	34			
		India	03			
		Nepal	01			
		Sri Lanka	01			
		U.S. America	15			
		Canada	07			
		Germany	16			
		France	11			
		The United Kingdom	09			
		Italy	03			
		Russian Federation	02			
		Spain	02			
		Belgium	01			
		Finland	01			
		Sweden	01			
		United Arab Emirates	08			
		Egypt	01			
		Other International conveyance (Japan)	218			
27.	16 Feb. 2020	China	51174	51 857	1666 + (03 outside china)	52

Table 1. CONT.

S. no.	Date	Country	Confirmed case (country wise)	Total case (worldwide)	Total Death (China + outside China)	Reference
		Singapore	72			
		Japan	53			
		Korea	29			
		Malaysia	22			
		Viet Nam	16			
		Australia	15			
		Philippines	03			
		Cambodia	01			
		Thailand	34			
		India	03			
		Nepal	01			
		Sri Lanka	01			
		U.S. America	15			
		Canada	07			
		Germany	16			
		France	12			
		The United Kingdom	09			
		Italy	03			
		Russian Federation	02			
		Spain	02			
		Belgium	01			
		Finland	01			
		Sweden	01			
		United Arab Emirates	08			
		Egypt	01			
		Other International conveyance (Japan)	355			
28.	17 Feb. 2020	China	70635	71 429	1772 + (03 outside china)	53
		Singapore	75			
		Japan	59			
		Korea	30			
		Malaysia	22			
		Viet Nam	16			
		Australia	15			
		Philippines	03			
		Cambodia	01			
		Thailand	35			
		India	03			
		Nepal	01			
		Sri Lanka	01			
		U.S. America	15			
		Canada	07			
		Germany	16			
		France	12			
		The United Kingdom	09			
		Italy	03			
		Russian Federation	02			

Table 1. CONT.

S. no.	Date	Country	Confirmed case (country wise)	Total case (worldwide)	Total Death (China + outside China)	Reference
		Spain	02			
		Belgium	01			
		Finland	01			
		Sweden	01			
		United Arab Emirates	09			
		Egypt	01			
		Other International conveyance (Japan)	454			
29.	18 Feb. 2020	China	72528	73 332	1870 + (03 outside china)	54
		Singapore	77			
		Japan	65			
		Korea	31			
		Malaysia	22			
		Viet Nam	16			
		Australia	15			
		Philippines	03			
		Cambodia	01			
		Thailand	35			
		India	03			
		Nepal	01			
		Sri Lanka	01			
		U.S. America	15			
		Canada	08			
		Germany	16			
		France	12			
		The United Kingdom	09			
		Italy	03			
		Russian Federation	02			
		Spain	02			
		Belgium	01			
		Finland	01			
		Sweden	01			
		United Arab Emirates	09			
		Egypt	01			
		Other International conveyance (Japan)	454			