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Analytical Study Of Prevention From Transmission Of Covid-19 Pandemic And Its Affect On Worldwide Population

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Abstract

The World Health Organization has recently declared coronavirus disease 2019 (Covid-19), a public health emergency of international concern The coronavirus is a family of viruses that can cause a range of illnesses in humans including common cold and more severe forms like SARS and MERS which are life-threatening. Coronaviruses are minute in size (65–125 nm in diameter) and contain a single-stranded RNA as a nucleic material, size ranging from 26 to 32kbs in length. The incubation period of COVID-19 is 1–14 days. It is highly transmissible in humans, especially in age of patients 47–59 years and children.

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. COVID-19 primarily spreads through the respiratory tract, by airborne droplets, respiratory secretions, and direct contact for a low infective dose. Common symptoms of COVID-19 noticed by the many scientists among effected peoples were fever, shortness of breath, pressure in the chest, Confusion, Cough sore throat and headache. It has been suggested by the many scientists that there is no cure for coronaviruses, but they should stay at home, Avoid close contact with other people, Covering the mouth and nose with Face Mask /handkerchief, Maintain social/ physical distance of about 01 meter from other people, Keep physically active and Boosting immunity through Physical and Yogic Exercise.

Analysis of countrywide collected data revealed that American peoples were found more effected from COVID-19 followed by Spain, Italy, Germany, England, France, Turkey, China, Iran and Russia. Highest death were also noticed in America and lowest in Russia. When the data was collected continent wide, the results revealed the highest

infected cases in North America, followed by Asia, Europe, South America, Africa, and Australia/Oceania. In whole world, 23,56, 774 peoples were found effected from Covid-19. The 1,64,662 death of the peoples had occurred in world upto 20/04/2020.

Keywords: Corona virus, COVID-19, MERS-CoV, SARS-CoV, Worldwide, Infection, Death

1. INTRODUCTION

A novel coronavirus (2019-nCoV) associated with human to human transmission and severe human infection has been recently reported from the city of Wuhan in China. Coronaviruses belong to the Coronaviridae family in the Nidovirales order. Corona represents crown-like spikes on the outer surface of the virus; thus, it was named as a coronavirus.

Coronaviruses are minute in size (65–125 nm in diameter) and contain a single-stranded RNA as a nucleic material, size ranging from 26 to 32kbs in length (Fig. 1). The subgroups of coronaviruses family are alpha (a), beta (b), gamma (c) and delta (d) coronavirus. The severe acute respiratory syndrome coronavirus (SARS-CoV), H5N1 influenza A, H1N1 2009 and Middle East respiratory syndrome coronavirus (MERS-CoV) cause acute lung injury (ALI) and acute respiratory distress syndrome (ARDS) which leads to pulmonary failure and result in fatality. These viruses were thought to infect only animals until the world witnessed a severe acute respiratory syndrome (SARS) outbreak caused by SARS-CoV, 2002 in Guangdong, China (Zhong, et. al., 2003) . Only a decade later, another pathogenic coronavirus, known as Middle East respiratory syndrome coronavirus (MERS-CoV) caused an endemic in Middle Eastern countries (Wang, et.al., 2013).

Recently at the end of 2019, Wuhan an emerging business hub of China experienced an outbreak of a novel coronavirus that killed more than eighteen hundred and infected over seventy thousand individuals within the first fifty days of the epidemic. This virus was reported to be a member of the b group of coronaviruses. The novel virus was named as Wuhan coronavirus or 2019 novel coronavirus (2019-nCov) by the Chinese researchers. The International Committee on Taxonomy of Viruses (ICTV) named the virus as SARS-CoV-2

and the disease as COVID-19 (Cui, et.al., 2019; Lai, et.al., 2019 and WHO, 2020) In the history, SRAS-CoV (2003) infected 8098 individuals with mortality rate of 9%, across 26 contries in the world, on the other hand, novel corona virus (2019) infected 120,000 induviduals with mortality rate of 2.9%, across 109 countries, till date of this writing. It shows that the transmission rate of SARS-CoV-2 is higher than SRAS-CoV and the reason could be genetic recombination event at S protein in the RBD region of SARS-CoV-2 may have enhanced its transmission ability. In this review article, we discuss the origination of human coronaviruses briefly. We further discuss the associated infectiousness and biological features of SARS and MERS with a special focus on COVID-19.

Coronavirus is an enveloped positive-sense RNA virus, which is characterized by club-like spikes projecting from its surface. Although coronavirus is commonly associated with acute respiratory infections in humans, its ability to infect multiple host species and a variety of diseases makes it a complex pathogen (Fung et al., 2019).

A novel coronavirus designated as 2019-nCoV is another human pathogen. This new virus was first discovered in 2019 when viral metagenomics was carried out on three bronchoalveolar-lavage specimens from Chinese adult patients with unexplained severe pneumonia (Zhu et al., 2020).

As of January 26th 2020, confirmed cases of 2019-nCoV have been reported in many countries, including China, Hong Kong, Macau, Taiwan, Australia, France, Japan, Malaysia, Nepal, Singapore, Thailand, The Republic of Korea, United States, Vietnam (https://www.cdc.gov/coronavirus/2019-ncov/)

COVID-19 was first identified and isolated from pneumonia patent belongs to Wuhan, china (WHO, 2020 and Zhu, et al.,2019). In The coronavirus disease 2019 (COVID-19) epidemic started on 12 December 2019 in Wuhan, the capital of Central China's Hubei Province, had caused 2,794 laboratory-confirmed infections including 80 deaths by 26 January 2020 (Zhu, et.al., 2020). December, 2019, several exported cases have been confirmed in other provinces in China, and in Thailand, Japan, South Korea, and the USA (WHO, 2020).

From Jan 10, 2020, we enrolled a family of six patients who travelled to Wuhan from Shenzhen between Dec 29, 2019 and Jan 4, 2020. Of six family members who travelled to Wuhan, five were identified as infected with the novel coronavirus. None of the family members had contacts with Wuhan markets or animals, although two had visited a Wuhan hospital. Five family members (aged 36–66 years) presented with fever, upper or lower respiratory tract symptoms, or diarrhoea, or a combination of these 3–6 days after exposure. Since then, it has rapidly spread across China and in other countries, raising major global concerns. As of February 28, 2020, 78,959 cases of SARS-CoV-2 infection have been confirmed in China, with 2,791 deaths. (https://www.who.int/emergencies/diseases/novel-coronavirus-2019 reports).

The complete information about the Corona virus was unknown. But a video became viral in social media. A scientist from china told that the Corona virus was spread from a girl who have taken beat soup. Another scientist from China told that the Corona virus was reached through snake and beat in human beings. The reason spreading the Corona virus in China was due to release of virus from laboratory of Wuhan (China) and Beat. Main reason of spreading the Corona virus was eating beat by china peoples, because SARS and MERS were the dangerous disease of respiration, usually finds in Beat.

The coronavirus is a family of viruses that can cause a range of illnesses in humans including common cold and more severe forms like SARS and MERS which are life-threatening. The virus is named after its shape which takes the form of a crown with protrusions around it and hence is known as coronavirus. (coronavirus/ articleshow/73542980.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst).

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 bronchoalvelor lavage fluid in china in 2020. It is also

detected in blood samples. Till now, corona virus was not confirmed in feaces and urine sample of patent (Zhu, et.al., 2020; Huang, et.al., 2020; Chan, et.al.,2020)

the patients had a history of direct contact with wildlife. The most common symptoms were fever and cough. Diarrhea was uncommon. The median incubation period was 4 days (interquartile range, 2 to 7). finding on chest computed tomography, CT abnormality was found patients with non-severe disease and severe disease. Lymphocytopenia was present in the patients on admission

The World Health Organization (WHO) has recently declared coronavirus disease 2019 (Covid-19) a public health emergency of international concern (WHO, 2020). As of February 25, 2020, a total of 81,109 laboratory-confirmed cases had been documented globally (Phan, et.al; Rothe, et.al; & National Health Commission of China, 2020) .

Zhu, et.al. (2020) discovered a large number of SARS-related coronaviruses (SARSr-CoVs) in their natural reservoir host, bats. Previous studies have shown that some bat SARSr-CoVs have the potential to infect humans. They reported the identification and characterization of a new coronavirus (2019-nCoV), which caused an epidemic of acute respiratory syndrome in humans in Wuhan, China. Full-length genome sequences were obtained from five patients at an early stage of the outbreak. The sequences are almost identical and share 79.6% sequence identity to SARS-CoV. Furthermore, They showed that 2019-nCoV is 96% identical at the whole-genome level to a bat coronavirus.

Kumar, Malviya, Sharma (2020) expressed that 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.

Liu, et.al. (2020) found in review that the estimated mean *R*0 (average) for COVID-19 is around 3.28, with a median of 2.79 and IQR of 1.16, which is considerably higher than the WHO estimate at 1.95. These estimates of average depend on the estimation method used as well as the validity of the underlying assumptions. Due to insufficient data and short onset time, current estimates of average for COVID- 19 are possibly biased. However, as more data are accumulated, estimation error can be expected to decrease and a clearer picture should form. Based on these considerations, average for COVID-19 is expected to be around 2–3, which is broadly consistent with the WHO estimate

Wu, et. al. (2020) focused on emerging infectious diseases, such as severe acute respiratory syndrome (SARS) and Zika virus disease, present a major threat to public health. Despite intense research efforts, how, when and where new diseases appear are still a source of considerable uncertainty. A severe respiratory disease was recently reported in Wuhan, Hubei province, China. As of 25 January 2020, at least 1,975 cases had been reported since the first patient was hospitalized on 12 December 2019. Epidemiological investigations have suggested that the outbreak was associated with a seafood market in Wuhan. They studied a single patient who was a worker at the market and who was admitted to the Central Hospital of Wuhan on 26 December 2019 while experiencing a severe respiratory syndrome that included fever, dizziness and a cough. Metagenomic RNA sequencing of a sample of bronchoalveolar lavage fluid from the patient identified a new RNA virus strain from the family *Coronaviridae*, which is designated as '2019-nCoV'. They revealed that the virus was most closely related to a group of SARS-like coronaviruses that had previously been found in bats in China.

Cui, Li and Shi (2019) studied the severe acute respiratory syndrome coronavirus (SARS- CoV) and Middle East respiratory syndrome coronavirus (MERS- CoV) are two highly transmissible and pathogenic viruses that emerged in humans at the beginning of the 21st century. Both viruses likely originated in bats, and genetically diverse coronaviruses that are related to SARS- CoV and MERS- CoV were discovered in bats worldwide.

In this Review , they summarized the current knowledge on the origin and evolution of these two pathogenic coronaviruses and discuss their receptor usage. They also highlight the diversity and potential of spillover of bat- borne coronaviruses

Shereen et.al.,(2020) reviewed the COVID-19 is a highly transmittable and pathogenic viral infection caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which emerged in Wuhan, China and spread around the world. Genomic analysis revealed that SARS-CoV-2 is phylogenetically related to severe acute respiratory syndrome-like (SARS-like) bat viruses, therefore bats could be the possible primary reservoir. The intermediate source of origin and transfer to humans is not known, however, the rapid human to human transfer has been confirmed widely. In the current review, They summarized and comparatively analyzed the emergence and pathogenicity of COVID-19 infection and previous human coronaviruses severe acute respiratory syndrome coronavirus (SARS-CoV) and middle east respiratory syndrome coronavirus (MERS-CoV).

3. 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 mortally 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 (CDC, 2003 and Peiris, et. al., 2003).

Coronaviruses cause respiratory and intestinal infections in animals and humans1. They were not considered to be highly pathogenic to humans until the outbreak of severe acute respiratory syndrome (SARS) in 2002 and 2003 in Guangdong province, China (Zhong, et.al., 2003 & Ksiazek, et al., 2003), as the coronaviruses that circulated before that time in humans mostly caused mild infections in immunocompetent people. Ten years after SARS, another highly pathogenic coronavirus, Middle East respiratory syndrome coronavirus (MERSCoV) emerged in Middle Eastern countries (Zaki, et.al., 2012).

Dr. Jhang Zingisian, A specialist of respiratory related diseases in Hubai Professional Hospital, Wuhan (China) first time talk with Shinhua-a Govt new agency in China. He told to this agency about the three member of family i.e. wife, husband and son about the infection among them on 26 December, 2019. Female was suffering from fever, Cuff and problem in respiration, Husband was suffering from tiredness and son was suffering from problem of respiration only. From the Cite-scan of the whole family, Dr. Zingisian said that too much damage was observed in lungs. He told that the lungs of son were found to have much damage and condition of lungs was very worst. Son refused for the treatment of lungs. His parents were also suffering from same abnormality. On 27th December, another patient was came. He was also suffering from same abnormality. Blood test of this patient confirmed the infection in lungs. Same way, many cases were observed in December 2019. Dr. Zingisian, has declared the probable infectious diseases of lungs. (Source- Published in Denik Bhaskar, Chhattisgarh, 19/04/2020 p.12).

4. SPREADING HISTORY OF COVID-19

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 Jan2020, 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).

Wuhan, China, in December 2019 identified as a zoonotic coronavirus, similar to SARS coronavirus and MERS coronavirus and named COVID-19. As of 8 February 2020, 33 738 confirmed cases and 811 deaths have been reported in China (Ying, et.al., 2020)

Based on the current information, most patients had a good prognosis, while a few patients were in critical condition, especially the elderly and those with chronic underlying diseases. As of **1** March 2020, a total of 79,968 confirmed cases, including 14,475 with severe illness, and 2873 deaths in mainland China had been reported by WHO.

The data collected for COVID-19 from WHO website and internet was analysed in number of infected cases peoples and death cases of people worldwide and results are presented in Table 1 to 9 as given below;

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TABLE 1.

TOP TEN COUNTRYWISE INFECTION OF COVID-19 IN WORLD AS ON 20/04/2020

S.N0.	Country	Cases	Death
1	.America	759687	40682
2	Spain	195944	20453
3	Italy	178972	23660
4	Germany	141672	4404
5	England	120067	16060
6	France	112606	19718
7	Turkey	86306	2017
8	China	83817	4636
9	Iran	82211	5118
10	Russia	42853	361

SOURCE: WORLD HEALTH ORGANIZATION

TABLE 2.

CONTINENTWISE INFECTED CASES AND DEATH OF COVID-19 IN WORLD UPTO 20/04/2020

S,No.	Continents	Cases	Death
1	North America	815151	43433
2	South America	82253	3849
3	Africa	22282	1119
4	Asia	380720	14682
5	Australia/Oceania	7964	89
6	Europe	1046759	101405
7	Other Country related to America	1645	85
	Total	**2356774**	**164662**

Source: https://www.ecdc.europa.eu/en/publications-data/ -covid-19-cases-worldwide/WHO

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TABLE 3

COVID-19 –INFECTED CASES AND DEATH IN NORTH AMERICA CONTINENT UPTO 20/04/2020

S,No.	Country	Cases	Death
1	Antigua_and_Barbuda	23	2
2	Bahamas	60	9
3	Barbados	75	5
4	Belize	18	2
5	Canada	34777	1580
6	Costa_Rica	660	4
7	Cuba	1035	34
8	Dominica	16	0
9	Dominican_Republic	4680	226
10	El_Salvador	201	7
11	Grenada	14	0
12	Guatemala	289	7

13	Haiti	47	3
14	Honduras	477	46
15	Jamaica	196	5
16	Mexico	8261	686
17	Nicaragua	12	1
18	Panama	4467	126
19	Saint_Kitts_and_Nevis	15	0
20	Saint_Lucia	15	0
21	Saint_Vincent_and_the_Grenadines	12	0
22	Trinidad_and_Tobago	114	8
23	United_States_of_America	759687	40682
	Total	**815151**	**43433**

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TABLE 4

COVID-19 – INFECTED CASES AND DEATH IN SOUTH AMERICA CONTINENT UPTO 20/04/2020

S,No.	Country	Cases	Death
1	Argentina	2930	134
2	Bolivia	564	33
3	Brazil	38654	2462
4	Chile	10088	133
5	Colombia	3792	179
6	Ecuador	9468	474
7	Guyana	65	7
8	Paraguay	206	8
9	Peru	15628	400
10	Suriname	10	0
11	Uruguay	592	10
12	Venezuela	256	9
	Total	**82253**	**3849**

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TABLE 5

COVID-19 – INFECTED CASES AND DEATH IN OTHER COUNTRY RELATED TO AMERICA UPTO 20/04/2020

S,No.	Country	Cases	Death
1	Anguilla	3	0
2	Aruba	97	2
3	Bermuda	86	5
4	Bonaire, Saint Eustatius and Saba	5	0
5	British_Virgin_Islands	2	0
6	Cayman_Islands	61	1
7	CuraÃ§ao	14	1
8	Falkland_Islands_(Malvinas)	11	0
9	Greenland	11	0
10	Montserrat	11	0
11	Puerto_Rico	1213	62
12	Sint_Maarten	67	10
13	Turks_and_Caicos_islands	11	1

14	United_States_Virgin_Islands	53	3
	Total	**1645**	**85**

TABLE 6

COVID-19 – INFECTED CASES AND DEATH IN TO AFRICA CONTINENT

UPTO 20/04/2020

S,No.	Country	Cases	Death
1	Algeria	2629	375
2	Angola	24	2
3	Benin	37	1
4	Burkina_Faso	576	36
5	Burundi	6	1
6	Cameroon	1016	42
7	Cape_Verde	61	1
8	Central_African_Republic	12	0
9	Chad	33	0
10	Congo	160	6

11	Cote_dIvoire	847	9
12	Democratic_Republic_of_the_Congo	332	25
13	Djibouti	846	2
14	Egypt	3144	239
15	Equatorial_Guinea	79	0
16	Eritrea	39	0
17	Eswatini	22	1
18	Ethiopia	108	3
19	Gabon	109	1
20	Gambia	10	1
21	Ghana	1042	9
22	Guinea	579	5
23	Guinea_Bissau	50	0
24	Kenya	270	14
25	Liberia	91	8
26	Libya	49	1
27	Madagascar	121	0

28	Malawi	17	2
29	Mali	224	14
30	Mauritania	7	1
31	Mauritius	328	9
32	Morocco	2855	141
33	Mozambique	39	0
34	Namibia	16	0
35	Niger	648	20
36	Nigeria	627	21
37	Rwanda	147	0
38	Sao_Tome_and_Principe	4	0
39	Senegal	367	4
40	Seychelles	11	0
41	Sierra_Leone	35	0
42	Somalia	164	7
43	South_Africa	3158	54
44	South_Sudan	3	0

45	Sudan	66	10
46	Togo	84	5
47	Tunisia	879	38
48	Uganda	55	0
49	United_Republic_of_Tanzania	170	5
50	Zambia	61	3
51	Zimbabwe	25	3
	Total	**22282**	**1119**

TABLE 7

COVID-19 – INFECTED CASES AND DEATH IN TO ASIA CONTINENT

UPTO 20/04/2020

S,No.	Country	Cases	Death
1	Afghanistan	996	33
2	Bahrain	1873	7
3	Bangladesh	2456	91
4	Bhutan	5	0
5	Brunei_D arussalam	138	1

6	Cambodia	122	0
7	China	83817	4636
8	India	17265	543
9	Indonesia	6575	582
10	Iran	82211	5118

Table 7 (Continued)

S,No.	Country	Cases	Death
11	Iraq	1539	82
12	Israel	13491	172
13	Japan	10751	171
14	Jordan	2152	26
15	Kazakhstan	1735	19
16	Kuwait	1915	7
17	Kyrgyzstan	568	7
18	Laos	19	0
19	Lebanon	673	21
20	Malaysia	5389	89

21	Maldives	52	0
22	Mongolia	32	0
23	Myanmar	111	5
24	Nepal	31	0
25	Oman	1266	7
26	Pakistan	8418	176
27	Palestine	322	2
28	Philippines	6259	409
29	Qatar	5448	8
30	Saudi_Arabia	9362	97
31	Singapore	6588	11
32	South_Korea	10674	236
33	Sri_Lanka	295	7
34	Syria	39	3
35	Taiwan	420	6
36	Thailand	2765	47
37	Timor_Leste	19	0

38	Turkey	86306	2017
39	United_Arab_Emirates	6781	41
40	Uzbekistan	1565	5
41	Vietnam	276	0
42	Yemen	1	0
	Total	**380720**	**14682**

TABLE 8

COVID-19 – INFECTED CASES AND DEATH IN AUSTRALIA/OCEANIA CONTINENT UPTO 20/04/2020

S,No.	Country	Cases	Death
1	Australia	6612	70
2	Fiji	17	0
3	French_Polynesia	55	0
4	Guam	136	5
5	New_Caledonia	18	0
6	New_Zealand	1105	12
7	Northern_Mariana_Islands	14	2

8	Papua_New_Guinea	7	0
	Total	**7964**	**89**

TABLE 9

COVID-19 – INFECTED CASES AND DEATH IN EUROPE CONTINENT

UPTO 20/04/2020

S,No.	Country	Cases	Death
1	Albania	467	23
2	Andorra	713	36
3	Armenia	1339	22
4	Austria	14710	452
5	Azerbaijan	1398	19
6	Belarus	4779	47
7	Belgium	38496	5683
8	Bosnia_and_Herzegovina	1269	46
9	Bulgaria	915	43
10	Croatia	1871	47
11	Cyprus	767	17

12	Czechia	6787	188
13	Denmark	7384	355
14	Estonia	1528	40
15	Faroe_Islands	185	0
16	Finland	3783	94
17	France	112606	19718
18	Georgia	394	4
19	Germany	141672	4404
20	Gibraltar	133	4
21	Greece	2235	110
22	Guernsey	239	9
23	Holy_See	8	0
24	Hungary	1984	199
25	Iceland	1771	9
26	Ireland	15251	610
27	Isle_of_Man	298	6
28	Italy	178972	23660

29	Jersey	249	12
30	Kosovo	510	12
31	Latvia	727	5
32	Liechtenstein	82	1
33	Lithuania	1326	36
34	Luxembourg	3550	73
35	Malta	427	3
36	Moldova	2472	67
37	Monaco	98	3
38	Montenegro	308	5
39	Netherlands	32655	3684
40	North_Macedonia	1207	51
41	Norway	7068	154
42	Poland	9287	360
43	Portugal	20206	714
44	Romania	8746	434
45	Russia	42853	361

46	San_Marino	461	39

Table 9 (Continued)

S,No.	Country	Cases	Death
47	Serbia	6318	122
48	Slovakia	1161	12
49	Slovenia	1330	74
50	Spain	195944	20453
51	Sweden	14385	1540
52	Switzerland	27658	1134
53	Ukraine	5710	151
54	United_Kingdom	120067	16060
	Total	**1046759**	**101405**

5. TRANSMISSION OF COVID-19

Firstly Corona virus (2019-nCoV) was isolated from Wuhan, China at 7 Jan. 2020. 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- Corona virus causes respiratory infection including pneumonia,

cold, sneezing and coughing while in animal it causes diarrhea and upper respiratory diseases.

COVID-19 primarily spreads through the respiratory tract, by droplets, respiratory secretions, and direct contact for a low infective dose

. The incubation period of COVID-19 is 1–14 days. It is highly transmissible in humans, especially in age of patients 47–59 years and children. As it is designated SARS-CoV-2, COVID-19 patients presented certainly similar symptoms, such as fever, malaise, and cough. Most adults or children with SARS-CoV-2 infection presented with mild flu-like symptoms and a few patients are in critical condition and rapidly develop acute respiratory distress syndrome, respiratory failure, multiple organ failure, even deaths.

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 advised to avoid public place and close contact to infected persons and pet animals.

6. COMMON SYMPTOMS

Common symptoms of COVID-19 include:

- A low-grade fever
- Breathlessness (shortness of breath)
- persistent pain or pressure in the chest
- Confusion
- Excessive drowsiness
- Cough that gets more severe over time
- potential loss of taste or smell

Cold- or flu-like symptoms usually set in from 2–4 days after a coronavirus infection and are typically mild. However, symptoms vary from person-to-person, and some forms of the virus can be fatal. General symptoms may be- sneezing, runny nose, fatigue,

cough, fever, sore throat and exacerbated asthma. It may take 2–14 days for a person to notice symptoms after infection.

The National Institutes of Health (NIH) suggest that several groups of people have the highest risk of developing complications due to COVID-19. These groups include:

- young children
- people aged 65 years or older
- women who are pregnant

7. CLINICAL SYMPTOMS

The common clinical manifestations included fever , cough , fatigue , sputum production, shortness of breath, sore throat, and headache. In addition, a part of patients manifested gastrointestinal symptoms, with diarrhea and vomiting. Fever and cough were the dominant symptoms whereas upper respiratory symptoms and gastrointestinal symptoms were rare. The elderly and those with underlying disorders like hypertension, chronic obstructive pulmonary disease, diabetes, cardiovascular disease, developed rapidly into acute respiratory distress syndrome, septic shock, metabolic acidosis hard to correct and coagulation dysfunction, even leading to the death. During this infection, most patients had normal or decreased white blood cell counts, and lymphocytopenia. But in the severe patients, the neutrophil count, D-dimer, blood urea, and creatinine levels were higher significantly, and the lymphocyte counts continued to decrease.

8. PREVENTIVE MEASURES

The best way to prevent and slow down transmission is be well informed about the COVID-19 virus, the disease it causes and how it spreads. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face.

There is no cure for coronaviruses that cause symptoms resembling the common cold. Treatments include self-care and over-the-counter medication. People can take several precautionary measure as given below;

1 Rest and avoid overexertion

2 Drink enough water

3 Avoid smoking and smoky areas

4 Take acetaminophen for pain and fever

5 Use of a clean humidifier

6 Stay at home

ACSM is dedicated to supporting and promoting health through physical activity. Amid concerns around the coronavirus disease 2019 (COVID-19) pandemic, individuals in communities across the country and around the world are being encouraged to stay home. (https://www.acsm.org/read-research/ staying-physically-active-during-covid-19-pandemic)

7 Avoid close contact with other people.

8 Covering the mouth and nose with a tissue or handkerchief

9 Dispose off any tissues after use and maintain hygiene around the home.

10 Maintain social/ physical distance of about 01 meter from people.

11 Keep in Self-Isolation.

12 physically-active-during-covid-19-pandemic

13 Washing the hands

14 Use of Face Mask

15 Use of personal protection Equipments (PPE Kit) by Doctors, Nurses, and on duty Govt servants

16 Use of Allopathic Medicine prescribed by Doctors.

17. Boosting immunity through Physical and Yogic Exercise

The immune system is a complex network of cells and proteins that defends the body against infection. The immune system keeps a record of every germ (microbe) it has ever defeated so it can recognise and destroy the microbe quickly if it enters the body again. Abnormalities of the immune system can lead to allergic diseases, immuno-deficiencies and autoimmune disorders. (https://www.betterhealth.vic.gov.au/health).

The immune system is defined as the bodily system that protects the body from foreign substances, cells, and tissues by producing the immune response and that includes especially the thymus, spleen, lymph nodes, special deposits of lymphoid tissue (as in the gastrointestinal tract and bone marrow), macrophages, lymphocytes including the B cells and T cells, and antibodies.

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Aerobics, Dance, Calisthenics, Jogging, Cross Country Run, working out using gym equipment, yogic exercises and meditation effect the immunity system of human being to cope from COVID-19 infection

Exercise in home protect from infection through boosting immunity. The human immune system is a highly intricate network of cells and molecules designed to keep the host free from infection and disease. Exercise is known to have a profound impact on the normal

functioning of the immune system. Having higher age and sex-adjusted scores for cardiorespiratory fitness and performing regular exercise of moderate- to vigorous-intensity exercise that fall within ACSM guidelines has been shown to improve immune responses to vaccination, lower chronic low-grade inflammation, and improve various immune markers in several disease states including cancer, HIV, cardiovascular disease, diabetes, cognitive impairment and obesity.

Exercise increased the maximal oxygen uptake resulting from both central and peripheral Adaptations, capillary density in skeletal muscle, threshold for the accumulation of lactate in the blood and threshold for the onset of disease signs or symptoms. Exercise decreased the minute ventilation at a given absolute sub-maximal intensity, myocardial oxygen cost for a given absolute sub-maximal intensity and heart rate and blood pressure at a given sub-maximal intensity. Exercise help us in reduction in Cardiovascular Disease Risk Factors i.e. Resting systolic/diastolic pressure, total body fat, reduced intra-abdominal fat, insulin needs, improved glucose tolerance, blood platelet adhesiveness & aggregation, serum triglycerides, inflammation, decreased Morbidity and Mortality, decreased anxiety and depression, improve cognitive function, enhance physical function and independent living in older individuals, enhance feelings of well-being, enhance performance of work, recreational, and sport activities, reduce risk of falls and injuries from falls in older individuals, mitigation of functional limitations in older adults (www.acsm.org)

. Over a prolonged period of time, too much stress leads to too much cortisol being released in our bodies, which in turn lowers the immune functions and metabolism, leading to rapid weight gain, susceptibility of body to pathogens, osteoporosis, blood pressure imbalance, muscle weakness, etc. Modern research accepts three aspects of yoga as one of the best methods for moderating the production of cortisol, thereby managing the stress response of the body. By reducing cortisol levels, yoga therefore raises the immunity levels of the body., when we hold our body in a yoga posture for a few breaths/counts, our parasympathetic nervous system is stimulated, which in turn lowers our BP to enable a better post-stress response. Exercise in the gym or outdoors cannot massage our internal organs, which are nothing but muscles performing a particular function. Yoga is able to enhance the

body's natural defense mechanism against free radicals. Yogic exercise to improve your social health can also help this kind of people who are facing withdrawal symptoms it can also help in overcoming this illness and gives them a positive aim and new purpose in life. We can practice the mountain pose, for strengthen the back bone, raised arms pose as worshiping the sun to improve flexibility, garland pose for strengthen the hip muscles, lunge pose for detoxify the body, Pranayama helps in living a long and healthy life, Belly Breathing help to reduces muscular tension, Nadi Sodhan Pranayama helps us balance the hormones of the body and Bhastrika Pranayama strengthens and tones the abdominal region and drains out excess phlegm from the lungs.Yoga being the best way to destress and unwind and is proven to be one of the most effective immunity boosters that we can adopt for a healthy lifestyle.

9.. DIAGNOSIS

A doctor can diagnose the virus responsible by taking a sample of respiratory fluids, such as mucus from the nose, or blood.

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