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A REVIEW ON WORLDWIDE CORONAVIRUS (COVID-19)

Shipra Gupta[1], Vijay Kumar[2], Amit Gupta[3]

[1]Associate Professor, Department of Commerce, Graphic Era Hill University, Dehradun, Uttrakhand
[2]Professor in Physics and Dean Allied Sciences, Graphic Era Hill University, Dehradun, Uttrakhand.
[3]A. P. Department of Biotechnology, Graphic Era Deemed to be University, Dehradun, Uttrakhand

E-mail: vijay_phd05@rediffmail.com

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ABSTRACT: Today, more than two hundred countries of whole world are facing the problem of coronavirus COVID-19. This virus is communicated from one place to another by the medium of human beings. The transmission of virus is occurred by touching the contaminated surface. The contaminated surfaces may be of metal like steel, brass, copper etc., wood, plastic, glass, and disposal goods etc. The life of contaminated surfaces is depended upon the nature of materials. Some Different types of chemicals with various concentrations are used to destroy the virus from the contaminated surface. The use of some chemicals with various concentrations depends upon the use of exposure time. No medicine or vaccine is available to control this pandemic situation. Only one successful method to control this problem is only lock down to the people in their home to break the chain of virus. Another phase of this virus is positive for environment as low movement of vehicles, industries lock down air, water and land pollution are decreased. In this manuscript, the authors review all the aspects of coronavirus COVID-19 which will be beneficial to understand about this problem in future.

KEYWORDS: COVID-19 Coronavirus, effects on world, life of people, effect on environment, SARS-CoV, contaminated surfaces, chemicals for protection.

I. INTRODUCTION

Now a day, the virus of COVID-19 becomes a global health problem for human beings. The symptoms of this virus are similar to pneumonia and diagnose after only incubation times between 3 to 14 days. It can spread through one infected hand to another during hand shake, and also due to contact with the infected surface of metal, glass, plastic, concrete, dirty places and even by fiber cloths. The problem of this virus has been increased suddenly and captures the whole world. Thus in this manuscript we reviewed the literature regarding this problem, so that people become aware and update about this problem. Many studies revealed that this virus is survived on all surfaces for up to contact with sanitizer, ethanol, H_2O_2 (hydrogen per oxide) within 30-40 seconds [13, 16]. Other chemicals may be sodium hypochlorite, benzalkonium chloride, chlorhexidine digluconate etc [8, 11]. At present, no specific formula of drugs, vaccines are not available in India and at globe. The method to vanish this virus is only to stop the chain and it is possible by the stop of movement of the human beings (lock down). Thus, the governments of all countries are trying to lock down their state and cities. Only by precaution, human being can defeat this virus. A comparative study of facts related to this problem is required among all the countries. It is also discussed how climate, population density, eating habits, and pollution etc. are responsible for this problem.

II. REVIEW OF LITERATURE

First time citizens of Guangdong, China are suffered by SARS-CoV in 2002-03 [5]. It spreads in 8000 persons and in 29 coutries with 800 deaths at that time [6,7]. Second time citizens of Saudi Arabia were infected in 2012 by MERS-CoV. 35% was the death rate at that time, [9, 12]. One positive thing was that the transmission of this virus was limited in middle east countries [10]. At present, the transmission of coronavirus COVID-19 is not limited geographically and it is spreading in the whole world. When a human body comes in contact with this virus, it become multiple and transmit to another person by shake hand, hugging, by aerosols , droplets those are available in air due to cough, contact with contaminated surface etc [3,18]. The persons who are infected by COVID-19 have shown the following symptoms: 98% cases show only fever, 76% are suffered by cough, 44% muscles pain, 8% headache and only 3% are suffered with diarrhea [15,19]. Dr.Venliyang Li was the first person who alert about COVID-19 in China. On 31st December, first virus prone case was found at Wuhan city in China. This virus is considered more dangerous due to its tendency of transmission from one human being to another. In January month a passenger steps down from cruise in Hong Kong. Around 1700 health workers and

50 thousands confirmed cases have affected from virus as per information available by State Health Commission, Hubei till 14-02-2020 [2, 14].

All over world, total infected cases of COVID-19 are 3,414,027, total deaths are 239,777and recovered cases are 1,086,883 (as on 02 May 2020) [1,4]. All countries around the world are affected by this problem. This data is increased continuously day by day. In different virus infections, the days required for cure for MERS, (2 -10 days) for SARS and (2 -14 days) and for novel coronavirus COVID-19 (14-24 days) [20, 21]. The aim of this review was to brief the data available about this dangerous virus so that the society will take it seriously and also aim aware to the society about the positive and negative aspects.

Types of viruses: Many types of viruses are available in whole world like Smallpox, diarrhea, Marburg, Plague, Infectious Malaria, HIV/AIDS, Influenza, Cholera, Ebola, Rabies, Pneumonia, Middle East respiratory syndrome (MERS), Dengue, Hantaviruses, Anthrax, MRSA "superbug", Pertussis, Tetanus, Meningitis, Syphilis, SARS, Leprosy, Measles, Zika etc [23,24]. Except these some new viruses are infecting the people from last two decades. One dangerous virus at this time is related to the Coronavirus family. The coronaviruses which can affect human beings have a large group [17, 25]. When these viruses become in touch with the human beings, it show the symptoms of pneumonia in beginning [2, 3]. HCoV-229E (HCoV-229E,HCoV-NL63, HCoV-OC43 and HCoV-HKU1), HCoV-NL63, HCoV-OC43, HCoV-HKU1, SARS-CoV and MERS-CoV are six CoVs are known till 2007 [22,27,28].

III. METHOD

The number of cases of COVID-19 is increasing continuously in whole world. To understand this pandemic situation, this comparative study is doing. The factors of comparison are total infected cases, recovered cases, death cases with respect to the countries climate, temperature and population density. This comparative study will help to understand the exact scenario that how this pandemic situation depends upon the geographical and climate of any country. It may be helpful to find the solution of this pandemic situation in future. For this study, the data (total infected cases, death cases, recovered cases, population, temperature with age and sex of cases) of all the countries are collected from the different sources [21,26,]. The data of symptoms of patients, death percentage with respect to ages of patients, death percentages with respect to sex, percentage of deaths with respect to premedical history are collected. The current information is taken from the website of worldometer.info, in which continuously updating about the novel coronavirus is going on. The data are also collected from all authentic modes, daily news papers, T V news channels and radio news etc. Some data of masks materials are also collected for the welfare of society. After collecting the data, it is classified in tables. Bibliographic data base of life sciences and biomedical information, medical literature analysis and retrieval system have also been prepared. 26 published manuscript/reports of reputed journals are studied for this manuscript.

IV. DISCUSSION

After the analysis of above discussions, it is seen that the maximum patients who are infected by COVID-19 virus show many symptoms but maximum patients are suffering from fever and cough. However, it is considered that the virus is started from Wuhan city of China and number of infected/death cases were in China but after the precautions and many decision like lock down, sanitization etc., the situation becomes under control in China. Table 1 reveals the percentage of infected patients with respect to the symptoms of the infected patients. The infection is also depended upon age of the person. Table 2 represents the percentage of death with respect to the ages of patients. The spreading nature of virus is also depended upon sex of people. It is seen that the effects of virus is more in male than female. Table 3 reveals the percentage of infected patients with respect to their sex. The severity of virus also depends upon the previous history of the patients. The percentage of deaths with respect to previous diseases is given in table 4. However, due to this virus, the whole world is disturbed but there are some positive signs of the lock down of city, district, state and countries. Due to lockdown, the citizens are inside the home, markets, malls, railway & bus stations and airports are closed. Animals are roaming outside of the forest. In some cities different birds and animals are seeing inside the cities. As per different news channels, the roaming of birds and animals are shown in table 5. Right now, any medicine or vaccine of this virus is not available in whole world. People have to made precautions like social distances, use of mask etc. Different masks are available in market. Table 6 represents the percentage of filtration of virus by mask of different materials. Figure 1 shows the variation of infected patients with respect to countries. Fig. 2 represents the variation of infected patients per million (IPPM) with respect to Asian countries. In fig 3, variation of death percentage is given with respect to age of patients. Novel coronavirus COVID-19 affects the people and society in much way. The effects of this pandemic situation are not good for whole world.

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Positive and negative effects of this pandemic situation:

Effect on food habits: It is seen that the virus is started from the places where only non vegetarian foods are used. A lot of amount of harmful germs are available inside the bats and snakes. When human beings are used these as a food, sometimes the germs present in the bodies may not be died and reached in to the body of human beings.

Effect on climate: As per above given study, the transmission of viruses like SARS-CoV and MERS-CoV of coronavirus family depend upon the climate, that's why the spreading of these viruses are limited and easy to control. But the nature of novel coronavirus COVID-19 does not control by climate change. It has been spread in all countries of different climate.

Temperature: As above given reports, the novel coronavirus COVID-19 can not survive after the temperature of 30^0C. But no academic or experimental theory is available to prove it. It is also seen that the places where temperature is greater than 30^0c, the infected cases of people are available.

Air pressure: No study is available which relate the air pressure with the coronavirus. Air pressure affects the human health but how it can affect on COVID-19 coronavirus, it is not known.

Pollution: (a) Air pollution: There is no report available which brief that COVID-19 affects the air pollution. But due to this virus, the target which we plan to decrease the air pollution till 2030, it has been achieved only in one year. The main reason to decrease air pollution is not movement of trains, buses, cars and airplanes.

Sound Pollution: Factories, Industries, busses, trucks, trains and airplanes are responsible for sound pollution and all transports are stopped due to lock down situation. The level of sound pollution is decreased unexpected.

Water Pollution: Now a day, people are not present at beach. Ships are not moving in sea. Factories which emit dirty and polluted water are temporary closed. Maximum hotels emit the polluted water are closed. It may become the reason to decrease water pollution. These rivers water are looking transparent and fishes can be easily visible in water. However it also creates a huge loss on economy of a country.

Average Income per person: Due to the lock down situation in country, the income of labors, shopkeepers, industrialists and all persons are affected. The total income of the people will be decreased. Thus average income per person will be decreased due to this pandemic situation.

Gross Domestic product (GDP): In present scenario, the manufacturing of all products are stopped. Every country requires a lot of expansion to fight with this virus. It may affect on GDP. **viii. Education:** Education is the most essential part for the students of any country. Due to the lock down situation, the students can not go to school, college and University. Some University and Colleges are trying to teach students by online way but it is seemed that this period become a great loss for the students.

Examination: Due to this pandemic situation, the examinations of all students were postponed. It becomes stressful for the students. The examination which were held at international level like Asian Olympiad of Physics Examination was cancelled for this year.

Age group: The virus COVID-19 affects each and every age group person. Most affected persons are old age group persons. The probability of recovery of Young person is more than old age person.

Currency factors: The movement of currency is very responsible in spreading of virus. The purchase and sell are done by currency in any country. If currency is given by an infected person, it can affect all persons who will touch it directly. Online payments play an important role in this pandemic situation.

Saving of papers: 35% waste papers are available in garbage of a city. In general, the waste papers are generated due to written examination of students, class teaching and due to the manual working of offices and hotels. In the present scenario, hotels, offices are closed. Teaching and examination are doing online which may decrease the amount of waste papers.

Sports: Maximum sports of the world are postponed till further notice.

V. RESULTS

Most data represent that the main symptoms of the patients are only fever, fatigue and dry cough, Shortness of Breath, Muscles & head ache, Sore throat, chest pain, runny nose, diarrhea and vomiting etc. In some cases,

multiple symptoms are seen. In this study, it is also seen that survival timing and temperature of MERS-CoV, TGEV, MHV and HCoV are varied at steel, PVC, Silicon rubber and ceramic surface from 2 day to 28 day at 20^0C to 30 ^{0}C. SARS-CoV virus can survive at the surface of plastic, metals, wood, paper, and glass from 1 day to 5 day at room temperature. It is also seen that one virus can infect 406 people. Its growth rate of transmission is so fast that first one lakh person are infected in 67 day while next one lakh are infected in ten days and third one lakh person are infected only in 4 days worldwide. It means the people of all countries should aware about the dangerous situation of the world. This chain of infection can be breakdown by the use of alcoholic chemicals like ethanol, propanol, benzalkonium chloride, hydrogen peroxide and povidone iodine etc. More than 70% infected patients having age more than 60 years. It is observed that infected patients per million population (IPPMP) is maximum (1248) for Israel while with respect to population, the order of this country is 31st. The population of China is maximum in Asian Countries, while IPPMP is only 57. IPPMP of India is only 8, however population of India is second highest order in Asia. IPPMP is minimum for countries Yemen, Nepal, Syria and Myanmar of Asia. The percentages of male & female infected patients are 61.8 & 38.2 respectively. It is also seen that the countries who were late to take decision of lock down and social distances and those who were not serious in time are paying a great loss in terms of human beings life and economy.

These attributes of software, for example, complexity and imperceptibility make the advancement of SQA approach and its effective execution a profoundly expert test.

VI. CONCLUSIONS

From the above analysis, it is concluded that the maximum percentage of symptom which is seen in patients of Coronavirus COVID-19 is fever, fatigue and cough. The fatality rate is decreased with respect to age of infected person. After studying the data of coronavirus infected person, it is also concluded that the infected person having age above 80 years are at higher risk and below 10 years are at least risk. The numbers of male infected person are more than female. If the infected person has some premedical history, the risk of fatality will be increased. The decreasing order of fatality rate for premedical history patients are cardiovascular, diabetes, chronic respiratory disease, hypertension and cancer. The maximum risk has those infected patients having cardiovascular disease as premedical history. The minimum risk has those infected patients having cancer disease as premedical history.

VII. PRECAUTIONS

From the above analysis, it is suggested that people should follow the following instructions:

a. When any person comes inside the home, he/she should wash their hands properly by beach soap or alcoholic sanitizer.
b. People should keep their surrounding clean.
c. When government is allowed air services, the use of flight should be minimum as passengers in flight may be from different places of Nation and also from different countries.
d. In this pandemic situation, the use of public transport like bus, train and any other conveyance should be minimum.
e. The proper arrangement of sanitization at every transport station should be used.
f. The use of a proper and suitable mask should be used at face.
g. As the transmission of this virus is possible from one human being to another. In Guangzhou, southern Guangdong province, robots are used for many purposes. Similar method we should adopt.
h. Vegetarian and non-vegetarian food should be cooked separately and in proper way.

Conflict of interest statement

None

Funding Sources

None

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Observations:

Table 1: The percentage of symptoms found in cases of COVID-19 (Based on study Wang et al and Chen et al [16, 20]

S. No.	Symptoms in Patients of COVID-19	Percentage	Percentage
		Wang et al [16]	Chen et al [20]
1	Fever	98.6	83
2	Fatigue	69.6	-
3	Dry Cough	59.4	82
4	Shortness of Breath	-	31
5	Muscles pain	-	11
6	Confusion	-	9
7	Head ach	-	8
8	Sore Throat	-	5
9	Rhinorrhoea (Runny nose)	-	4
10	Chest pain	-	2
11	Diarrhea	-	2
12	Nausea and vomiting	-	1
13	More than one sign	-	90
14	Fever, cough and shortness	-	15

Table 2: The fatality rate with respect to age of infected person [1]

Age (years)	Percentage of rate of death (only in virus confirmed patients	Percentage of rate of death (in all cases)
More than 80	21.9	14.8
70-79	-	8.0
60-69	-	3.6
50-59	-	1.3
40-49	-	0.4

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30-39	-	0.2
20-29	-	0.2
10-19	-	0.2
0-9	-	no fatalities

Table 3: Rate of death in confirmed cases of infection by virus and all cases with respect to sex [1]

Sex	Percentage of rate of death	Percentage of rate of death
Male	4.7	2.8
Female	2.8	1.7

Table 4: Rate of death in preexisting medical conditions [1]

PRE-EXISTING CONDITION	Percentage of rate of death (for confirmed cases)	Percentage of rate of death (for all cases)
Cardiovascular disease	13.2	10.5
Diabetes	9.2	7.3
Chronic respiratory disease	8.0	6.3
Hypertension	8.4	6.0
Cancer	7.6	5.6
no pre-existing conditions	---	0.9

Table 5: Birds and animals visible on road at different places of world in lick down period.

City name	**Animal/bird name**
Chandigarh	Sambhar
Poland,Japan	Deer
Wales	Wild goat
Delhi	Green birds
Dehradun	Wild elephant, Sambhar
St. Phansisco	Wild fox
Chilli	Leopard
Paris	Ducks

ISSN- 2394-5125 VOL 7, ISSUE 19, 2020

Sasaari	Wild pig
Nepal	Wild Rhino
Karnatka	Wild elephant
Vaishali,Supoll(Bihar)	Leopard and elephant
Orissa	Tortoise

Table 6: Cloth filtration data for masks

T-shirt filtration	100%
Cotton	69%
Cotton Mix	74%
Scarf	62%
Linen	60%
Silk	58%

Fig 1: Variation between number of infected patients with respect to countries

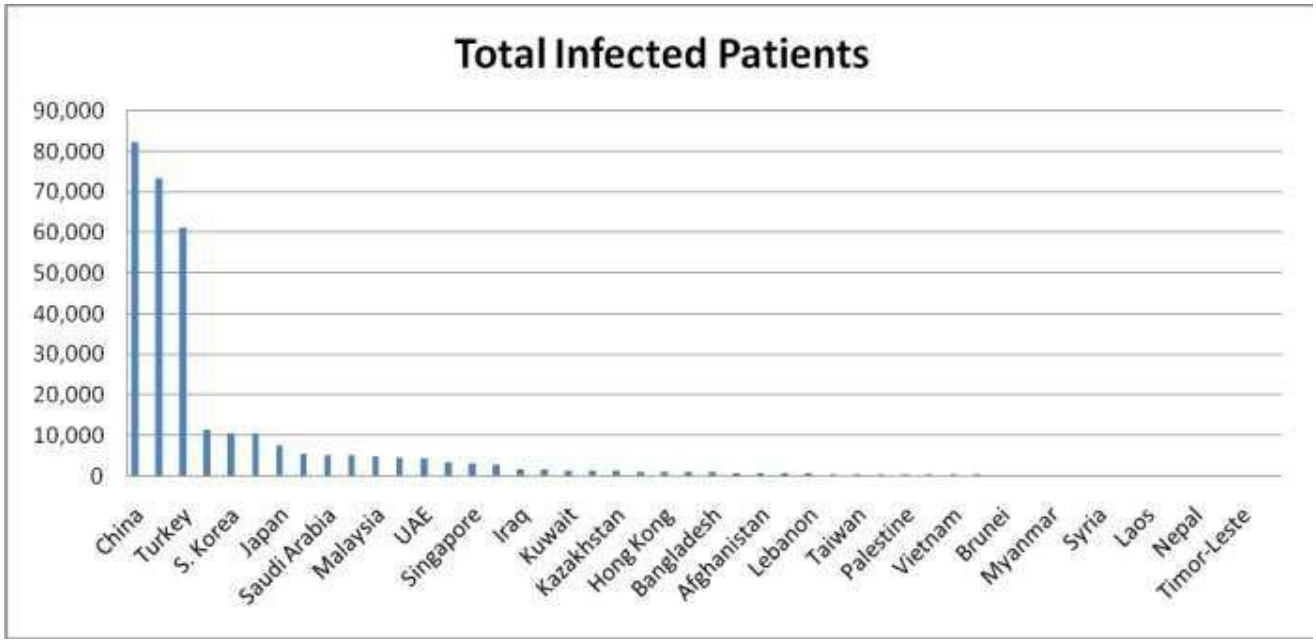

Fig 2: Variation between infected patients per million populations (IPPMP) with respect to countries of Asia

ISSN- 2394-5125 VOL 7, ISSUE 19, 2020

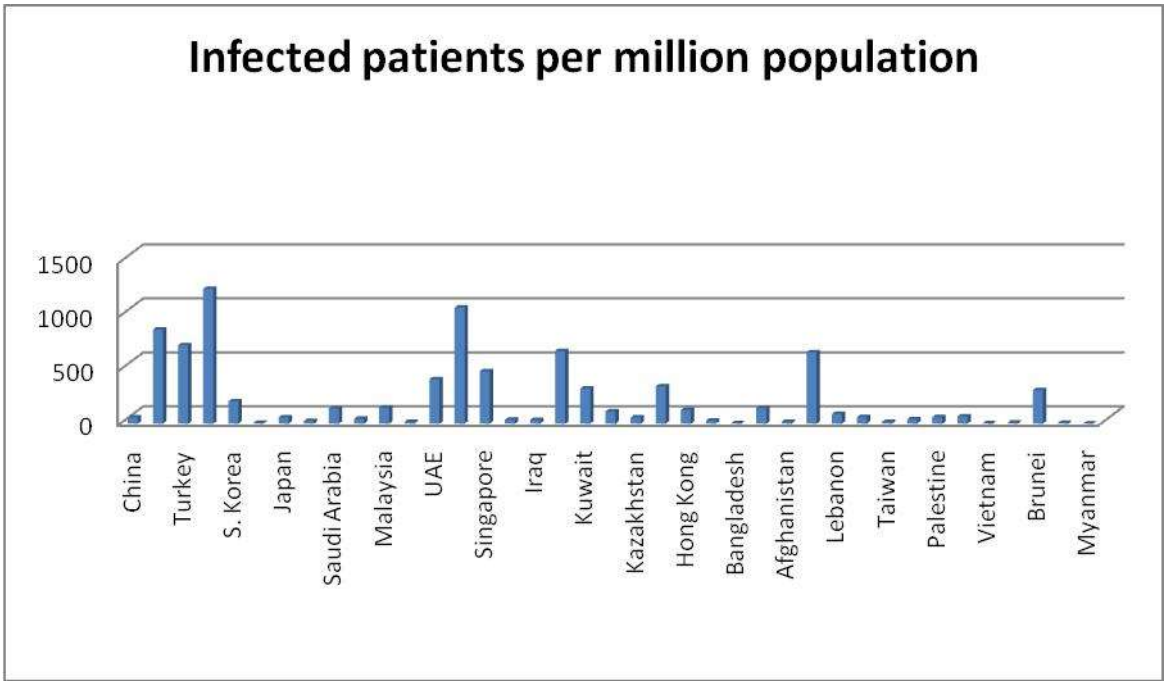

Fig. 3: Variation between percentages of death cases with respect to age of infected persons