

INTERNET OF THINGS (IoT) APPLICATIONS ROLE IN COVID-19

Baljeet kaur

Background and aim: Internet of Things (IoT) enabled healthcare system is useful for proper monitoring of COVID-19 patients, by employing an inter-connected network. It helps to increase patient satisfaction and reduces readmission rate in the hospitals.

Methods: Searched the databases of Google Scholar, Elsevier, SCOPUS and Research Gate

Results: IoT implementation impacts on reducing healthcare cost and improve treatment outcome of the suspected patients. This present study based research is attempted to highlight the overall applications of the well-proven IoT philosophy by offering a roadmap to tackle the COVID-19 pandemic.

Conclusions: IoT is helpful for an suspected patients of COVID-19 to identify symptoms and provides better treatment. It is useful for those people which have symptoms of corona virus.

Introduction

COVID-19 disease outbreak was started in the December, 2019 in the Wuhan city of China-largest transportation hub of China. During the spring festival of China the situation become epidemic. In January 2020, deep sequencing analysis from lower respiratory tract samples identified a novel virus severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) as causative agent for that observed pneumonia cluster. On February 11th, 2020, the World Health Organization (WHO) Director-General, Dr. Tedros Adhanom Ghebreyesus, named the disease caused by the SARS-CoV-2 as "COVID-19", and by March 11th, 2020 when the number of countries involved was 114, with more than 118,000 cases and over 4000 deaths, the WHO declared the pandemic status, the virus is imported to many regions including the low income countries. Till now, The infection rate of the COVID-19 in India remains low related to population size of the country. It is because of fast government action to quarantine the infected people and shut down all its borders. Still there is need of Anti-n-CoV drug development which can replace the supporting therapies for the treatment of infection.

Role of IoT for COVID-19

IoT is an innovative technological platform to fight with COVID-19 pandemic and can fulfil significant challenges during the lockdown situation. This technology is helpful to capture the real-time data and other necessary information of the infected patient. In the first step, IoT is used to capture health data from various locations of the infected patient and manage all the data using the virtual management system.

Impact of IoT in context to COVID-19 concerns

The Internet of Things concept utilises the inter-connected network for the effective flow and exchange of data. It also enables the social workers, patients etc. to be in connection with the service benefactors for discussing any issue and co-operation. Therefore, by employing the proposed IoT tactic in COVID-19 pandemic, the effective tracing of the patients, as well as the suspicious cases, can be completely assured.

Some particular smartphone-based application can also be developed so that the needy ones can get be benefitted out of it .The proper reporting of the symptoms and the recovery must be up-to-dated to the controller like doctors, physicians, caretakers, etc. to optimise the overall quarantine period.

Global technological advancements to resolve COVID-19 cases rapidly

To overcome and make the civilians more aware about the COVID-19 pandemic, the government of India has launched a smartphone application named as e ArogyaSetu, which is aimed to develop a connection between the important possible healthcare services and the people of India. This application tells the app holder about the closeness to the corona-positive person. So that the extra care can be taken while moving outside.

Generally the virus has four stages:-

Stage1: Imported Cases

Stage 2: Local Transmission

Stage 3: Community Transmission

Stage 4: Epidemic

At that time 138 patients from Wuhan city was admitted to hospital and investigated after COVID-19 infections the observations are represented in the Table 1:

Table 1: Most common clinical features--

S.No.	Clinical features	%
1.	Fatigue	70%
2.	Fever	99%
3.	Anorexia	40%
4.	Dry Cough	59%
5.	Myalgias	35%
6.	Sputum Production	27%
7.	Dyspnea	31%

Confirmed Cases report (December- March 21, 2020)

Applications of IoT for COVID-19

Major key-merits of using IoT for fighting COVID-19 pandemic. IoT uses a large number of interconnected devices to create a smart network for the proper health management system. It alerts and tracks any types of diseases to improve the safety of the patient. It digitally captures the data and information of the patient without any human interaction. This data is also helpful for decision-making process .

Major applications of IoT for COVID-19 pandemic.

S.No	Applications	Description
1	Internet-connected hospital like integrated network during any emergency	The implementation of IoT to support pandemic COVID-19 needs a complete within hospital premises
2	Inform the concerned medical staff patients and the and effectively	This integrated network will allow the staffs to respond more quickly whenever needed
3	Transparent COVID-19 treatment without any	The patients can avail the benefits offered partiality and favours
4	Automated treatment process become productive handling of the cases	The selection of treatment methods and helps the appropriate

- 5 Telehealth consultation available for the locations via employing the teleservices This especially makes the treatment needy ones in the remote well-connected
- 6 Wireless healthcare network to identify installed into COVID-19 patient identification and more fruitful Various authentic applications can be smartphones, which can make the procedure smoother
- 7 Smart tracing of infected patients handle the The impactful tracing of patients ultimately strengthened the service providers to cases more smartly
- 8 Real-time information during the spread are well information As the devices, locations, channels, etc. informed and connected, on-time
- 9 Rapid COVID-19 screening instance, the As the case arrived/found at first proper diagnosis will be attempted smart connected treatment
- 10 Identify innovative solution the utmost making innovations level. The overall quality of supervision is goal. It can be achieved by successful to the ground
- 11 Connect all medical tools and devices connected through the internet internet which information during During COVID-19 treatment, IoT medical tools and devices through convey the real-time treatment
- 12 Accurate forecasting of virus the use of can also help to predict coming times. It will also government, doctors, academicians, etc. to plan for a better working environment. Based on the data report available, some statistical method the situation in the help to plan the

Current Situation:- 1. **World-Global Coronavirus Updates:** The corona virus across the world surpassed more than 28.75 million cases according to a Reuters tally. As many as 918,894 people have succumbed to the virus bringing the global death toll closer to 1 million. Over 19.43 million people have recovered after testing positive globally.

The United States continues to top the charts with over 6.4 million infections and over 1.93 lakh deaths. The States reported 1,215 deaths on Friday, its highest toll since August 26. In Europe, France is re-emerging as an hotspot as it recorded over 10,000 additional Covid-19 cases for the first time in a day on Saturday.

Meanwhile, AstraZeneca and Oxford resumed their Covid-19 vaccine clinical trails in the United Kingdom on Saturday (August)after they were suspended due to a neurological reaction in a study subject.



Once a person is exposed to the infection, the disease may develop anytime between 1-14 days.

India-Health Minister Harsh Vardhan said that a total of 45,62,414 novel coronavirus cases and 76,271 deaths, with a case fatality rate of 1.67 per cent, had been reported in India till September 11. Speaking in the Lok Sabha, Vardhan said as many as 35,42,663 people, which is 77.65 per cent of the cases, had recovered from the pathogen.

Punjab--Punjab Chief Minister Amarinder Singh said on Wednesday the COVID-19 graph in the state would peak by mid-September when the state is estimated to see over one lakh cases and nearly 3,000 deaths.

The maximum cases and deaths from the infection have been primarily reported from Maharashtra, Andhra Pradesh, Tamil Nadu, Karantaka, Uttar Pradesh, Delhi, West Bengal, Telangana, Odisha, Assam, Kerala and Gujarat.

Common Questions arise:-

- * Does drinking lots of water help flush out COVID -19?
- * How dangerous it is?
- * What is the recovery time for COVID-19?
- * Is it spread through food or not?

PREVENTION-

Main Corona Virus Disease 2019 (COVID-19) prevention measures.

- * To use face masks
- * To cover coughs and sneezes
- * To wash hands regularly with soap or hand wash
- * To avoid contact with infected people or crowd
- * Avoid Hand shakes
- * To maintain an appropriate distance from people
- * To refrain from touching eyes, nose, and mouth
- * Use sanitizer regularly

In case of symptoms, seek medical care early and Consult your doctor immediately.

Management and Vaccination status of COVID-19

There is no vaccination available at the present time for the COVID-19. There are only supportive therapies are given to the suspected patients which are followed by health professionals around the world. Vaccine is on trail of 2 or 3 phases. The various supportive health therapies includes the maintenance of hydration, administration of antipyretic and analgesic and mechanical ventilations is giving as the supportive therapies to the patients. In some cases interferon alpha and ribavirin has been given to the patients at the early stages of the infection. Still there is need of proper vaccination to cure the COVID-19 infection which is still under research. It is difficult to differentiate the COVID-19 from the other types of the respiratory viral infections by the lab tests or clinically .Till there is need to ensure the adequate isolation for the health workers and patients to prevent the transmission of infection to the surroundings. Infected people use routine of antibiotics such be avoided in the confirmed cases.

While Chinese health organizations have recommended the short term therapy of corticosteroids with low dose in the COVID-19. The detailed guidelines for the critical care of COVID-19 have been already published by the WHO. As per now there is no approved treatment for the COVID-19 infection but antiviral drugs such as lopinavir-ritonavir and ribavirin are using based on the past experience of the MERS and SARS.

Main Corona Virus Disease 2019 (COVID-19) pharmacological experimental options.

- Glucocorticoids
- Remdesivir
- Chloroquine and hydroxychloroquine
- Tocilizumab
- Lopinavir-ritonavir
- Baraticinib
- Non-steroidal anti-inflammatory drugs
- Angiotensin converting enzyme 2
- * mainly in combination with azithromycin.

FUTURE PERSPECTIVES

Therefore, potential treatment initiatives and approaches need to be developed. First, India is taking necessary preventive to reduce viral transmission. Second, ICMR and the

Ministry of AYUSH provided guidelines to use conventional preventive and treatment strategies to increase immunity against COVID-19 . May these guidelines could help reduce the severity of the viral infection in elderly patients and increase life expectancy. The recent report from the director of ICMR mentioned that India would undergo randomized controlled trials using convalescent plasma of completely recovered COVID-19 patients. Convalescent plasma therapy is highly recommended, this has been rolled out in 20 health centers and will be increased .India has expertise in specialized medical/pharmaceutical industries with production facilities, and the government has established fast-tracking research to develop rapid diagnostic test kits and vaccines at low cost. Until we obtain an appropriate vaccine, it is highly recommended that we screen the red zoned areas to stop further transmission of the virus. This facility can be used for massive screening or at least in the red zoned areas without the need for personal protective equipment kits. India has attempted to broaden its research facilities and shift toward testing the mass population, as recommended by medical experts in India and worldwide.

Indian Govt already provide Toll free no for any health related enquiry i.e 91-11-23978046 or e-mail id is ncov2019@gmail.com and Punjab Govt provide toll free no. for every District.

“STAY SAFE,STAY AT HOME”

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