

2020

समाचार पत्रों से चयित अंश Newspapers Clippings

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology

Volume: 45 Issue: 78 12 April 2020



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DRDO at the forefront of fighting Covid-19

By Dibyendu Mondal

New Delhi: In a bid to fight against the deadly coronavirus pandemic, the DRDO (Defence Research and Development Organisation), using its scientific endeavour, has developed a host of protective equipment, ventilators and sanitisation equipment for helping the frontline workers.

The DRDO has developed 11 such products to combat the coronavirus. These products include visor-based full-face shield, isolation shelter, mobile area sanitisation system, advanced N99 masks, personal sanitisation equipment, portable backpack area sanitisation equipment, advanced PPEs (Personal Protection Equipment) for doctors and frontline health workers, ventilators and sanitisers.

With an anticipation of a growing need for ventilators in the coming days for patients fighting the coronavirus, the DRDO's Defence Bioengineering and Electromedical Laboratory in Bangalore, in partnership with Bharat Electronics Limited (BEL) and Scanray Pvt Ltd in Mysuru, will develop modern and portable ventilators at the earliest.

And, according to sources in the DRDO, works on the development of such ventilators are progressing and each scientist and technician is working to come up with the best and most advanced form of ventilator.

Apart from this, a personal sanitisation equipment which is a full body disinfection chamber has been developed by the DRDO's Vehicle Research and Development Establishment laboratory in Ahmednagar.

This personal sanitisation equipment, which is currently being used at the entrance of many markets across the country, is a walk-through full body disinfection chamber. It is a portable system equipped with sanitiser and soap dispenser. The decontamination is started using a foot pedal at the entry. On entering the chamber, an electrically operated pump creates a disinfectant mist of hypo sodium chloride for disinfecting. The mist spray is calibrated for an operation of 25 seconds and stops automatically, indicating completion of operation.

An official from the DRDO told The Sunday Guardian, "The person who enters the chamber will have to keep their eyes closed as per the procedure because of the disinfectant. This system consists of roof mounted and bottom tanks with a total of 700 litres capacity and approximately 650 personnel can pass through the chamber for disinfection until the refill is required. This system can be used for disinfection of personnel at the areas of controlled ingress and egress such as entry and exit to hospitals, malls, office buildings and critical installations."

Apart from this, the DRDO's Research Centre Imarat, Hyderabad laboratory and the Terminal Ballistics Research Laboratory in Chandigarh have developed a light weight face protection mask for frontline healthcare professionals handling Covid-19 patients.

According to the DRDO's laboratory, the frame of the mask has been made using 3D Printing, while the face covering thermoplastic is made using biodegradable renewable resources such as corn starch or sugarcane.

The DRDO's innovation to develop suits against CBRN (Chemical, Biological, Radiological and Nuclear) agents have also led to the development of a special bio suit for healthcare workers to fight Covid-19 using a "specific type" of fabric and a "specific type" of agent.

A DRDO official in the know of this development told this newspaper, "The suit has been prepared with the help of the industry and has been subjected to rigorous testing for textile parameters as well as protection against synthetic blood. The protection against synthetic blood exceeds the criteria defined for body suits by the Ministry of Health and Family Welfare.



Currently, the capacity of production exists at 7,000 suits per day, but efforts are on to ramp up the production to 15,000 suits per day.”

In an effort to help the government with rapid sanitization, the DRDO has also come up with a Trolley Mounted Large Area Sanitisation Equipment which has the capability of disinfecting up to 3,000 square metre area in one go.

<https://www.sundayguardianlive.com/news/drdo-forefront-fighting-covid-19>

THE HINDU BusinessLine

Sun, 12 April 2020

30 companies to manufacture ‘counter Covid-19 products’ with DRDO technology

According to the Directorate of Industry Interface and Technology Management, the technologies transferred to for this purpose are off-shoots of those developed by the organisation for defence purposes

By M Ramesh

Chennai: At least 30 companies will manufacture a range of ‘counter Covid-19’ products with technology provided by Defence Research and Development Organisation (DRDO). These are non-medicine products, such as ventilators, sanitisers, PPE, face shield and isolation shelters.

Notable among them is the Bengaluru-based PSU, Bharat Electronics Ltd, which will produce 30,000 ventilators. Dr Mayank Dwivedi, Director, Directorate of Industry Interface and Technology Management, which is a part of DRDO, told *BusinessLine* that the technologies transferred to for this purpose are off-shoots of those developed by the organisation for defence purposes. (DRDO transfers such technologies to the industry regularly; in this case, they happen to be for counter Covid-19 products.)

For instance, the know-how for ventilators comes from the on-board Oxygen generator technology developed under the Light Combat Aircraft (LCA) program.

All these technology agreements were put together in about ten days, Dr Dwivedi said. “To hasten the process of manufacture, DRDO has chosen to deal with industries who have been already working with us,” he said.

A good example of that is a Pune-based company called Raksha Polycoats, has been working with DRDO and ISRO for decades, making products like high altitude pulmonary odema (HAPO) bags and submarine escape suit for DRDO and products for satellite recovery systems for ISRO. Abjijit Sarkar, Managing Director of Raksha Polycoats told *BusinessLine* that the company would produce isolation shelters—basically, small, 10x10x9 feet rooms made out of metal frames and a special fabric. The company has capacity to make 500 shelters a month; production is to start next week. Raksha Polycoats is one of the two companies have DRDO has given technology to produce isolation shelters; the other one is Accurate Savan Defence, also based in Pune.

Hyderabad-based start-up, iMake, has been into the business of rapid prototyping since 2016. Interestingly, this company makes products, often using 3D printing, for the film industry. K Sudheer, one of the partners of iMake, said the company has made products such as jewellery worn by heroines in films. Now iMake is one of the five companies that have undertaken to produce visor-based face shields to be worn by health workers. (The others are Modern Manufacturers, Chandigarh, Kirat Mechanical Engineering, Chandigarh, Wipro 3D, Bengaluru, and Global Healthcare, Delhi.)

“Yesterday (Friday) we delivered 10,000 pieces,” Sudheer said. Because of its 3D printing, rapid prototyping expertise, iMake could come up with 14 versions of the products for DRDO to select from.

The company will produce 12,000 pieces a day; Sudheer said the capacity could be easily doubled if required.

Mumbai-based Setco is one of the companies that have undertaken to make sealants to seal seams in personal protection equipment (PPE). Yogesh Solanki of the company said that while the product was ready, there were problems in procuring raw materials and transporting them, during the lockdown phase. He said that the company could be producing “hundreds of tonnes” of the product once the “small, small problems” are removed.

Dr Dwivedi said that all these products are “world class” and also have huge export potential too.

<https://www.thehindubusinessline.com/companies/30-companies-to-manufacture-counter-covid-19-products-with-drdo-technology/article31315458.ece#>



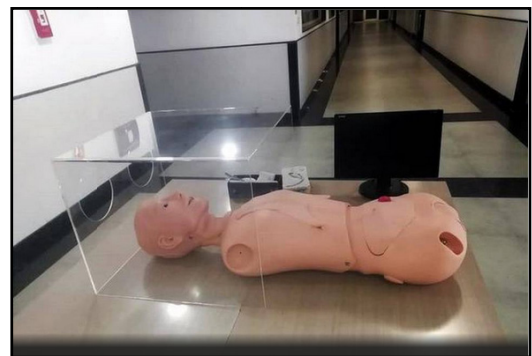
Sun, 12 April 2020

Another shield by DRDO against Covid

Aerosol Containment Box has a transparent cube that covers a patient's head up to the chest

Hyderabad: The Defence Research and Development Organisation (DRDO), which has been making several products such as personal protective suits and sanitisers, has come out with yet another product against COVID-19 called ‘Enclosure for Intubation Procedure - Aerosol Containment Box’ on Friday.

Its premier labs — Research Centre Imarat (RCI) in Hyderabad and Terminal Ballistics Research Laboratory in Chandigarh — have designed the product using Acrylic and Perspex materials, respectively. It consists of a transparent cube which covers patient's head up to the chest and acts as a safety barrier against transmitting droplets from patients to the healthcare workers while giving treatment.



The two circular ports allow the health worker's hands to pass and perform the airway procedures. The acrylic/perspex material used here is 50% lighter thermoplastic compared to glass making it easy to handle. The enclosure for aerosol containment is useful while taking samples from a suspected patient, during intubation, observation or during treatment to completely avoid droplets and aerosols emanating from them due to cough and sneeze, said an official spokesman.

Two Sizes

Two sizes of these Aerosol Containment Boxes have been designed and developed by DRDO for use by adult and child patients. The use of the enclosure could safeguard against spread of viral contamination of COVID-19 to reach on gown, gloves, face mask, eye shield, shoes and also on the floor of the hospitals effectively.

RCI Hyderabad has manufactured the prototype units at the local industry partners here and a demonstration has also been carried out by a team of doctors at ESI Medical College, Erragadda, upon which the design has been validated and accepted. Similarly, the design of TBRL has been tested and qualified at PGIMER, Chandigarh.

Required quantities of this latest innovation from the DRDO labs were being produced both in Hyderabad and Chandigarh, he added.

<https://www.thehindu.com/news/cities/Hyderabad/another-shield-by-drdo-against-covid/article31313244.ece>



Sun, 12 April 2020

Lightweight integrated aircrew helmet for Su-30, BISON, MiG 29 and Mirage aircraft tested: DRDO

Wind Blast Test on Lightweight Integrated Aircrew Helmet and Pressure Breathing Oxygen Mask for Pilots designed to primarily incorporate Helmet Mounted Display and Sight (HMDS) as per IAF requirement was subjected to open jet wind blast test at 600 KEAS at DGA, CEAT, France and was tested in eight different profiles and it has successfully withstood all the tests thereby proving the integrity of Helmet-Mask assembly during ejection.

The integrated helmet with internally retractable dual polycarbonate visor system (with EMI/EMC complied pre-amplifier meeting RS-03 test) and pressure breathing oxygen mask has been developed by Defence Bio-Engineering & Electro Medical Laboratory (DEBEL), Bengaluru, against specific QRs issued by Indian Air Force.

Lightweight Integrated Aircrew Helmet with EMI/EMC complied pre-amplifier has been developed for for Su-30, BISON, MiG 29 and Mirage aircraft.

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<https://idrw.org/lightweight-integrated-aircrew-helmet-for-su-30-bison-mig-29-and-mirage-aircraft-tested-drdo/#more-225079>



Sun, 12 April 2020

Static testing of 3rd stage rocket motor of Agni-V successfully tested: DRDO

Advanced Centre for Energetic Materials (ACEM), Nasik, successfully conducted sea level static testing of the third stage rocket motor of Agni-V on 4 March 2020. This test was conducted to qualify the propellant and evaluate the ballistic performance parameters.

Various parameters, viz., thrust, chamber pressure, igniter pressure, temperature, strain, displacement, vibration and acoustic pressure, were validated and real-time data was recorded. The pressure-time and thrust-time plots of the rocket motor matched exactly with the prediction. The



ballistic performance parameters closely matched with the predicted values.

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<https://idrw.org/static-testing-of-3rd-stage-rocket-motor-of-agni-v-successfully-tested-drdo/#more-225078>



DEFENCE AVIATION POST

Your Connect To The World Of Defence And Aviation

Sun, 12 April 2020

What is BrahMos missile's latest upgrade?

Last week, the Defence Research and Development Organisation (DRDO) carried out two successful tests of the latest variant of the BrahMos missile, one from the land platform and the other from air. BrahMos, developed through a collaboration between India and Russia, is one of the most advanced weapons in India's armoury.

The missile:

BrahMos is a cruise missile, meaning it can be guided towards a pre-determined land- or sea-based target. With a capability to attain speed 2.8 times that of sound (Mach 2.8), BrahMos is classified as supersonic cruise missile. A newer version under development is aimed at flying at speeds greater than Mach 5. These are called hypersonic cruise missiles. Besides decreasing the reaction time of the enemy, higher speeds also substantially reduce the chances of the missile getting intercepted.



An amalgam of the names of the rivers Brahmaputra and Moskva, BrahMos is being produced by BrahMos Aerospace, a joint venture company set up by DRDO and Mashinostroyeniya of Russia in 1998. The first version of the BrahMos supersonic cruise missile was inducted into the Indian Navy in 2005, meant to be fired from INS Rajput.

The test:

While the missile has been in India's arsenal for long, it is continuously upgraded and updated with new hardware and software. This is what necessitates periodic tests of the missile.

DRDO scientists said that in every such exercise of a specific variant of BrahMos, different parameters are put to test. Though the exact details are not disclosed, additional hardware and software systems are tested based on the inputs from the user, against more complex targets, and under different atmospheric conditions. The test results and observations are important for future analysis and further advancement.

"India's missile development programme has made sure that its missiles are upgraded and new systems are also developed. BrahMos has undergone development through the early 2000s till date. Its land-to-land, submarine-fired and now air-fired variants have been developed stage by stage. Each new version has something additional compared to the previous version," said a DRDO scientist.

<https://www.defenceaviationpost.com/2020/04/what-is-brahmos-missiles-latest-upgrade/>



Sun, 12 April 2020

Behind final clearance for Tejas, 10 concessions given to fighter jet

The indigenously-built Light Combat Aircraft (LCA), Tejas, received around 10 concessions, which enabled it to get the final operational clearance (FOC) last month, ThePrint has learnt.

The FOC was granted during the Aero India Show at Bengaluru in February, allowing the aircraft to be inducted into the Indian Air Force (IAF). Production, however, has already been delayed by seven years.

Highly-placed sources in the defence establishment told ThePrint that the drop tank (external fuel tanks) and other weapon configurations in the aircraft are yet to be cleared while the airframe fatigue test is still underway.

These are some of the 10 concessions granted to Tejas with regard to the FOC.

The number of concessions is significant as the much-delayed fighter jet is being inducted into the IAF to boost its depleting squadron strength. They are set to replace the ageing MiG-21 fleet.

In military industry parlance, concessions are those requirements that could be included at a later stage, in the final make of the aircraft, when feasible.

An officer involved in the Tejas programme, on condition of anonymity, however, said these concessions do not comprise structural changes to the aircraft. But the officer did say that “the airframe fatigue test is in progress and will take some time”.

The airframe fatigue test is a crucial test to determine the strength of an aircraft. It entails hanging a fully-loaded aircraft for a certain number of hours.

HAL spokesperson Gopal Sutar told ThePrint that given the complex eco-system of defence manufacturing, concessions are a norm in the aerospace industry.

<https://www.defenceaviationpost.com/2020/04/behind-final-clearance-for-tejas-10-concessions-given-to-fighter-jet/>



Sun, 12 April 2020

India's Arjun tank took decades to make. Why?

In the mid-1970s, India began development on a totally new, advanced main battle tank that would satisfy the needs of the country's Armoured Corps. An impressive combination of firepower, armour protection and mobility, the tank was to be India's first indigenously produced tank—and one of the best in the world. The service date for the tank, known as Arjun, was confidently set for 1985.

Instead, the Arjun suffered a tortuously long development period spanning two centuries. The final result, introduced into the army twenty-six years later than originally planned, is a mess of a tank that not even the Indian Army wants.

The Indian Army's Armoured Corps has been in existence for seventy-four years, tracing its roots to the Second World War, and has fought in every one of India's wars with neighbour and rival Pakistan. The Corps has across has sixty-three armoured regiments (the equivalent of battalions), spread across eight armoured and mechanised divisions and another seven armoured and mechanised brigades.



The decision to produce an indigenous Indian tank was made in 1972, shortly after the Indo-Pakistani War of 1971. In 1974, the state-run Defence Research and Development Organisation (DRDO) was tasked with developing the tank. It was to be a forty-ton vehicle, armed with a 105-millimetre gun. It would be small enough to be strategically mobile, capable of being shuttled on internal lines (roads and railroads) to vital sectors along the long border with Pakistan.

DRDO decided to make the tank, called Arjun, a mostly Indian design. The Combat Vehicles Research and Development Establishment, part of DRDO, was to design the hull, armour, turret, gun and running gear. The main gun and engine would be imported. Unfortunately, India's defence-industrial base was nowhere near capable of creating such a vehicle. As if that weren't enough of an obstacle, India's world-famous bureaucracy and red-tape machine was another enemy to progress.

Today, the Arjun Mk 1 is a sixty-two-ton tank, complete with a 120-millimetre gun, advanced composite armour, a 1,400-horsepower turbocharged engine, and advanced fire control and thermal sights. Although the tank's specifications are impressive, the actual product leaves a lot to be desired.

By 2009, thirty-five years after it was originally conceived, Arjun was "ready" for production. Despite shortcomings revealed in testing, the Indian Army was forced to buy 124 Arjuns—enough to equip just two armoured regiments—to keep state tank production facilities open. By mid-2015, two years after the purchase was complete, nearly 75 percent of the Arjun force was inoperable due to technical problems.

<https://www.defenceaviationpost.com/2020/04/indias-arjun-tank-took-decades-to-make-why/>



Sun, 12 April 2020

Combating Covid-19: IAF lifts raw materials for PPE production by DRDO

New Delhi: Amid the lockdown in wake of coronavirus outbreak, Indian Air Force (IAF) on Saturday flew dedicated sorties for Defence Research and Development Organisation (DRDO) and airlifted around 9000 Kg of raw material from various nodal points for producing Personal Protective Equipment (PPE) at the production facilities of DRDO.

IAF also airlifted N95/99 Masks manufactured by DRDO. The Indian Air Force (IAF) is making all efforts to ensure uninterrupted supply of essential commodities to the states.

On Friday, the IAF's C-17, C-130, IL-76, An-32 and Dornier aircraft dropped essential commodities at Mumbai, Bengaluru, Guwahati and Leh in the night.

Apart from this, the IAF flew over 140 sorties to ferry loads over 200 tonnes to locations across the country.

The government on March 24 announced a complete lockdown of the entire country for 21 days to fight COVID-19. All road, rail and air services will remain suspended during the lockdown. However, freight movement has been carrying essential commodities across the country.

Essential services like medical shops, petrol pumps, grocery stores milk booths and online shopping have been exempted from the lockdown.

India's total cases of coronavirus on Saturday climbed to 7,529 including 242 deaths and 652 people, who have either been cured or discharged, said the Union Ministry of Health and Family Welfare on Saturday.

<https://www.aninews.in/news/national/general-news/combating-covid-19-iaf-lifts-raw-materials-for-ppe-production-by-drdo20200411192105/>



Sun, 12 April 2020

Indian Air Force ensure timely delivery of the essential medical supplies and ration to the nodal points of various States

New Delhi: Indian Air Force (IAF) continues to be ready 24 x 7 to undertake any task for complementing the efforts of the Govt of India to contain the spread of the Novel Coronavirus. All efforts are being made to ensure timely delivery of the essential medical supplies and ration to the nodal points of various States, thereby equipping the State governments and supporting agencies to combat the contagion effectively and efficiently.

During the last few days, IAF airlifted essential medical supplies and commodities from nodal points to various States across the country including Maharashtra, Kerala, Telangana, Nagaland and the Union Territories of J&K and Ladakh.



Indian Air Force flew dedicated sorties for DRDO and airlifted around 9000 Kg of raw material from various nodal points for producing PPE at the production facilities of DRDO. It also airlifted N95/99 Masks manufactured by DRDO. Meanwhile, IAF is ensuring that all necessary precautions as specified by the Govt of India to prevent the spread of the contagion, are put in place while undertaking these tasks.

IAF is ever ready and geared up to meet all the emerging needs to support the fight against prevailing pandemic situation in the country.

<https://orissadiary.com/indian-air-force-ensure-timely-delivery-of-the-essential-medical-supplies-and-ration-to-the-nodal-points-of-various-states/>

Gender equality in Indian military: Implementation and road ahead

The recent decisions of the Honorable Supreme Court on February 17 and March 17 regarding grant of permanent commission to Women Officers (WOs) are welcome judgments, seen as a landmark step towards women's empowerment and corrective change to prevent perceived gender bias against women, with the Supreme Court playing the role of the change agent. The concerns expressed by the government, on behalf of Indian Armed Forces, like physiology, motherhood and physical attributes did not hold ground under the basic tenet of constitutional entitlement to dignity, which attaches to every individual irrespective of gender, to fair and equal conditions of work and a level playing field.

The ruling given with respect to the cases taken up with the Supreme Court, is to be implemented in three months. These are welcome societal changes and the military system has to gear up accordingly to address the concerns yet ensure that the operational effectiveness of the Armed Forces is not compromised. The issue was extensively covered by the media, and the Armed Forces responded positively with the Army Chief indicating that the roadmap for granting permanent commission to women officers was being put in place and processes were to start soon. The implementation, however, needs some serious analysis of some key issues to mitigate concerns.

A glance at the open source coverage of Supreme Court decisions seemed to suggest that the Indian military had a patriarchal mindset and the Supreme Court has bettered the system with this landmark judgment. The background needs to be put in perspective. The women were first inducted as Military Nursing Officers in 1927, as Medical Officers from 1943 in British Indian Army as per organizational needs to look after troops, families and public during deployments, which included female population.

Post-independence, the induction of WOs into the Indian Army through the Women Special Entry Scheme (WSES) started in 1992, after the approval of the Cabinet Committee on Parliamentary Affairs, as per the needs of the organization. In February 2019 the Government granted permanent commission to women officers in eight streams of the Army, in addition to the JAG and AEC, to whom it was granted earlier in 2008. All these decisions were also pathbreaking, need driven, societal changes taken voluntarily by Indian military and not by intervention of courts. Hence, it may not be right to perceive that the Indian military had a patriarchal mindset and resisted such changes. It is a fact that there are different conditions of service for WOs and their male counterparts in most cases, so far. These conditions of service kept getting modified to address concerns of WOs, starting from five years of service, changed to extendable by five years (5+5 years), followed by 5+5+4 and later made to 10+4 years, with little variation for few services and Indian Military has adopted accordingly. The fact is that WOs are proud and essential members of Indian military and their entry was need based and not court driven.

The differences in conditions of service for WOs and their male counterparts can be perceived in favour as well as against them. No one can deny that WOs have concessions in physical standards during recruiting, in battle physical efficiency tests and are generally given softer appointments (as far as possible) with due considerations to hygiene, sensitivities and privacy issues while accommodating them. For selection, they compete with female counterparts; hence selections of specified number of WOs is assured, as they are not competing with male counterparts. The disadvantages of difference in service conditions was inadequate/unequal growth opportunity to WO, need for permanent commission and inadequate incentive, which are well known and have been the main reason for the redressal given by the Supreme Court. The cases wherein male officers' tenures in difficult field stations have got extended in adjusting WOs for compassionate or

spouse postings or Child Care Leave, resulting in reduction in time for male officers to be with family in peace locations, to attend to their family needs have not surfaced much, because male officers have not gone to courts against the resultant extra hardship caused in an attempt to help out WOs by the organization.

This gender bias against men officers also needs to be set right by gender equality. The need for 'gender equality' is the societal need of the hour and applies to both female as well as male officers and should be ensured in the spirit of the judgment.

Operational Efficiency and Command Assignments

To implement the latest rulings of the Supreme Court on the grant of permanent commission to all WOs, their terms of engagement will have to be revised. As per media reports, the Indian Military is already working out models for it and I am sure that the system will settle down in due course, with some adjustments. The selection for command assignments have to be merit based irrespective of gender, which must not be compromised to ensure operational efficiency of the Indian Armed Forces.

Translating the same in the spirit of achieving gender equality, and the Supreme Court judgment, the same standards have to be applied across the board, without any gender bias, throughout their career. It therefore implies that the same standards irrespective of gender, be applied for recruitment of officers, training, career courses and criteria for command appointments. It entails same hardships be suffered by all officers and the same selection process be gone through for successive promotions, irrespective of the gender which will make the competition tougher for WOs.

To implement this, the selection for command be done through their confidential reports and promotion board, which should be a closed promotion board, common for both genders and the names and gender of the profile is hidden from the selection board. The profiles are then approved for promotions based on merit and capabilities and then decoded for names and gender later. The best officers should get the command irrespective of gender, as the troops respect competent leaders, who rough out inconvenient times with them. The cohesion of a military subunit is gained by officers and men being with each other in rough times. These are some basics of soldiering, which must not be violated to ensure operational efficiency. It means that the concessions given to WOs in recruitment and softer tenures must be withdrawn, and they must go through field and rough appointments with troops, to be at par with male counterparts to be accepted as 'Leaders' and not 'Appointed Officers'. Troops respect leaders irrespective of gender, but an appointed officer has to prove to be a leader. It may be noted that amongst male officers in the existing system, only 30 per cent to 50 per cent get command assignments. To implement the Supreme Court's decision, the experiment of giving command to WOs should be done in a graduated manner commencing with the services like Army Service Corps and Army Ordnance Corps, where women have been commissioned for the last three decades.

The fact that the Supreme Court delivered its decision in March 2020 to induct WOs in all types of warships in Indian Navy, as a natural process of societal evolution, the possible induction of WOs into combat arms is going to be the next challenge, which the Indian military will be confronted with, in due course. The leadership in combat arms at each level from detachment to highest formation is laid on a bedrock principle of 'Leading from the front', which must not be compromised. It implies that all officers and soldiers must go through the same selection, toughness schedule, promotion exams, command criteria assignments and appointments with no concessions.

Most foreign armies having WOs already have gender neutrality in physical standards or are working towards it. The concerns of physical attributes, physiology, minimal facilities for habitat, hygiene in combat ships, bunkers and long-range patrols, privacy needs, motherhood and childcare concerns are well known to WOs, as well as courts and public. The WOs who volunteer for combat arms with determination to overcome these concerns and are found suitable, at par with men counterparts, should be given the opportunity to take such a choice.

If every other combat arm officer has to go through commando or counterinsurgency or mountain warfare course and serve in Rashtriya Rifles or Assam Rifles for at least one tenure, the same yardstick must apply to WOs. In Israeli defence forces which follow gender equality, only four per cent of WOs are in combat roles and they too are mostly employed for combat support tasks within the combat arm. Most armies avoid women getting involved in close combat with the enemy, with due concern for their safety. It may be interesting to note that support services attract much more volunteers than combat arms, in view of greater stability of family, even amongst male officers. Hence, the trend is unlikely to be different in case of WOs.

The UN, which has been a pioneer in gender equality efforts — it has peacekeepers from militaries having greater share of WOs — have managed to get only 4.4 per cent volunteer WOs till 2019 as military peacekeepers against the target of 15.1 per cent even when the UN peacekeeping field missions are less dangerous than counter terror operations, and financially more lucrative. We can accordingly draw inferences of choices of WOs for hard combat duties, notwithstanding what appellants WOs have been saying in courts and media. However, even if few WOs want to opt for combat roles overcoming the affiliated concerns, they must get equal opportunity.

The Indian army cannot afford not to send WOs or women on forward posts or CI areas after inducting them in combat arms. Such an implementation will be disastrous, lead to gender inequality and create a gender bias against male officers, stressing them with longer hard field sufferings and invite grievances from them. Some male doctors have faced such management problems in the past. The Supreme Court, through its decisions of February and March 2020, has settled most aspirations of WOs, made major strides towards gender equality, which the organization will take some time to absorb. The Supreme Court has also expressed consciousness of the limitations which issues of national security and policy impose on the judicial evolution of doctrine in matters relating to the armed forces and, specifically, held the engagement of women in the combat arms, not in question in the appeal.

The Indian army has started recruiting WOs and soldiers in the Corps of Military Police, who can be employed in counter insurgency and terror operations on roles similar to women police, in dealing with the population. Such an experience will help the army in making further decisions on this issue. To ensure gender equality if same standards are applied, the army may well face a situation of not many WOs qualifying at the recruitment stage itself and start demanding quotas in recruitment and later in promotion, which must never be accepted, as it will amount to compromising operational efficiency of the Indian military, which is the “Instrument of last Resort” in terms of hard power of the nation.

Interpreting the orders of the Supreme Court, so long the level playing field is ensured in all aspects of gender equality throughout the service span from recruitment to retirement, the WOs volunteering for combat arms with determination to overcome all concerns, and found suitable at par with male counterparts, should be given the opportunity to take such a choice.

<https://kalingatv.com/miscellany/gender-equality-in-indian-military-implementation-and-road-ahead/>

IAF ensuring uninterrupted supply of essential commodities

- *IAF's C-17, C-130, IL-76, An-32 and Dornier aircraft dropped essentials at Mumbai, Bengaluru, Guwahati and Leh*
 - *The IAF flown over 140 sorties to ferry loads over 200 tonnes to locations across the country*
- Mumbai: Amid the coronavirus outbreak, the Indian Air Force (IAF) is making all efforts to ensure uninterrupted supply of essential commodities to the states.

On Friday, the IAF's C-17, C-130, IL-76, An-32 and Dornier aircraft dropped essential commodities at Mumbai, Bengaluru, Guwahati and Leh in the night.

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Essential services like medical shops, petrol pumps, grocery stores milk booths and online shopping have been exempted from the lockdown.

With 40 deaths and 1,035 new COVID-19 cases in the last 24 hours, India on Saturday witnessed the sharpest ever increase in coronavirus cases, taking the tally of the infected people in the country to 7,447, according to the Ministry of Health and Family Welfare.

(This story has been published from a wire agency feed without modifications to the text. Only the headline has been changed.)

<https://www.livemint.com/news/india/iaf-ensuring-uninterrupted-supply-of-essential-commodities-11586602466484.html>



India rushes Covid-19 medical team to Kuwait, says ready to help Gulf countries

Prime Minister Narendra Modi had asked Foreign Minister S Jaishankar to prepare for the medical team for Kuwait

By Shishir Gupta

New Delhi: The Indian Air Force on Saturday flew down a 15-member medical team to Kuwait to help tackle the increasing spread of coronavirus infection. The army team was sent after Kuwait Prime Minister Sheikh Sabah Al-Khaled Al-Hamad Al-Sabah called Prime Minister Narendra Modi for assistance.

External Affairs Minister Dr S Jaishankar had followed up on this phone conversation and later asked Chief of Defence Staff Bipin Rawat to organise a military team of doctors and healthcare professionals.

Jaishankar made the announcement on Twitter soon after the air force's C 130 Hercules transporter landed in Kuwait. "India's rapid response team arrives in Kuwait," he said.

A South Block official said Prime Minister Modi had instructed Jaishankar to send the team to assess the level of infection after the call from Kuwait PM on April 1.

"This is because of the special relationship between India and the Gulf countries. At a time when each country is for its own, India cannot let its Gulf allies down," said a senior official.

According to officials, more teams would be sent if required.

Indians constitute the largest group of expatriates with an estimated population of about 10 lakh in the State of Kuwait.

A foreign ministry statement said the medical team is expected to stay in Kuwait for two weeks during which it will render medical assistance in testing and treatment of the afflicted persons and training their personnel.

India has already supplied Hydroxy-Choloroquine to Bahrain after the King spoke to PM Modi on April 6. PM Modi also asked the Sultan of Oman during an April 7 telephonic conversation about any medical requirements.

<https://www.hindustantimes.com/india-news/india-rushes-covid-19-medical-team-to-kuwait-says-ready-to-help-gulf-countries/story-q2at5ekUpOdC0h62ix57VL.html>



THEWEEK

Sun, 12 April 2020

Will Covid-19 delay ISRO's Aditya, Gaganyaan and Chandrayaan-3?

ISRO Chief says decision can be taken only after lockdown is lifted

By Rekha Dixit

Three astronauts docked at the International Space Centre (ISS) on Thursday after taking off on a six-hour flight from Russia's Baikonur cosmodrome in Kazakhstan. The flight went as per schedule, though because of the ongoing COVID-19 pandemic, there were tweaks in the protocol, with the traditional pre-flight family meeting and press conference being modified to just an email presser.

However, the pandemic might cast a doubt on the dates of India's ambitious human space flight programme—Gaganyaan.

The first of three flights in the mission is slated for this December. The first two flights are unmanned, only the last, scheduled for 2022, will be a human flight.

Indian Space Research Organisation (ISRO) has been in lockdown since March 25, like the rest of India. "We, too, are working from home," ISRO Chairman K. Sivan told THE WEEK. "We cannot take any decision at this stage. We will have to wait for the lockdown to be lifted," he said.

Sivan added that all research and development and manufacturing were at a standstill, and only the work that is possible to be done from home, and through video conferencing, was being carried out. Even the astronaut training of the four test pilots of the Indian Air Force has stopped in Russia because of pandemic restrictions.

ISRO had planned a busy calendar, with around two dozen launches, including Gaganyaan flight 1 in December 2020 and Aditya, India's first solar probe, scheduled for a summer launch.

Also, Chandrayaan-3, though pushed to 2021, would have required a lot of work, both at the technical end, as well as the manufacturing.

Over 100 manufacturing units, big and small, in the private sector, are contracted to manufacture components for ISRO's missions. All of them are shut. The manufacturing is massive, with rockets, satellites and scientific instrumentation having to get ready.

For Gaganyaan, there is a lot more work. Apart from R&D in every department, from space food to landing parachutes, a lot of which the Defence Research and Development Organisation has been doing, these components have to be manufactured, too.

It isn't just the delay due to lockdown. With the country pressing all available funds into dealing with the economic impact of the pandemic, there might be a recalibration of what is absolutely necessary right now. The country's strategic sector has never lacked for want of funds in the past, and ISRO is the master of the game when it comes to frugality.

But in the light of the extraordinary situation created by pandemic, the call to review expenditure is getting loud. Congress MP Jairam Ramesh recently said the country should put on hold projects like Gaganyaan and the Central Vista redevelopment.

Meanwhile, the GISAT-1 launch, which was mysteriously called off on March 4, a day before take-off citing an ambiguous "technical reason", appears to be postponed indefinitely. The rocket was rolled out of the launch pad to the Vehicular Assembly Building, and its satellite removed from it.

<https://www.theweek.in/news/sci-tech/2020/04/11/will-covid-19-delay-isro-aditya-gaganyaan-chandrayaan3.html>



Sat, 11 April 2020

क्या सच में आ गई है कोरोना वायरस की दवा?

प्रदीप यादव

नई दिल्ली: विश्व स्वास्थ्य संगठन के अनुसार कोरोना वायरस दुनिया के 200 से ज्यादा देशों में पहुंच चुका है। 10 अप्रैल तक इस वायरस से दुनिया भर में करीब 17 लाख से ज्यादा लोग संक्रमित हो चुके हैं जबकि दुनिया भर में कोरोना वायरस से मरने वाले लोगों की संख्या 1 लाख के ऊपर पहुंच चुकी है। हालांकि, कोरोना महामारी की चपेट में आने वाले 3 लाख 76 हजार 327 लोग ठीक होकर घर भी जा चुके हैं।

भारत में भी बढ़ी संक्रमित लोगों की संख्या

भारत में कोविड-19 के अब तक 7447 मामले पाये गए हैं। इस वायरस से भारत में मरने वालों का आंकड़ा 239 पर पहुंच चुका है। कोरोना के बढ़ते खतरे को देखते हुए प्रधानमंत्री नरेंद्र मोदी ने 25 मार्च को पूरे भारत में 21 दिनों तक लॉकडाउन की घोषणा की है जोकि अब भी जारी है।

दवा ईजाद होने का दावा कितना सच?

इस महामारी के फैलने का सबसे बड़ा कारण यह है कि अब तक इसकी दवा इजाद नहीं हो सकी है। दुनिया भर में मेडिसिन क्षेत्र के वैज्ञानिक इसकी कारगर दवाई बनाने में जुटे हुए हैं। लेकिन सोशल मीडिया और दूसरे माध्यमों में ऐसी खबरें चल रही हैं कि अमेरिकी राष्ट्रपति डोनाल्ड ट्रंप ने इस वायरस की दवा बनाए जाने का दावा किया है।

21 मार्च को डोनाल्ड ट्रंप ने ट्वीट किया-"हाइड्रॉक्सीक्लोरोक्विन और एजिथ्रोमाइसिन का कॉम्बिनेशन मेडिसिन की दुनिया में बड़ा गेम चेंजर साबित हो सकता है। एफडीए ने ये बड़ा काम कर दिखाया है- थैंक्यू। इन दोनों एजेंट को तत्काल प्रभाव से इस्तेमाल में लाना चाहिए, लोगों की जान जा रही है।"

ट्रंप ने दावा किया कि अमेरिका के फूड एंड ड्रग एडमिनिस्ट्रेशन यानी एफडीए ने कोरोना वायरस की दवा खोज ली है। ट्रंप ने इसे लेकर व्हाइट हाउस की मीडिया ब्रीफिंग में भी बयान दिया। उन्होंने कहा- "हम इस दवा को तत्काल प्रभाव से उपलब्ध कराने जा रहे हैं। एफडीए ने काफी काबिलेतारीफ काम किया। ये दवा स्वीकृत हो चुकी है।"

क्या है ट्रंप के दावे की सच्चाई?

ईटी की फैक्ट चेक टीम ने इस बात की पड़ताल की कि क्या इन दो दवाओं का कॉम्बिनेशन कोरोना वायरस की औपचारिक दवाई है। साथ ही क्या अमेरिका के स्वास्थ्य विभाग की ओर से इसे स्वीकृत किया जा चुका है। ट्रंप के इस बयान के बाद 21 मार्च को ही अमेरिका के सेंटर फॉर डिजीज कंट्रोल एंड प्रिवेंशन (सीडीसी) ने एक रिपोर्ट जारी की।

इस रिपोर्ट में सीडीसी ने बताया कि कोविड-19 के मरीजों के लिए एफडीए ने कोई दवा अब तक अप्रूव नहीं की है। हालांकि इस रिपोर्ट में कहा गया है कि अमेरिका सहित कई देशों में कोविड-19 के मरीजों के लिए हाइड्रॉक्सीक्लोरोक्विन का इस्तेमाल किया जा रहा है।

हाइड्रॉक्सीक्लोरोक्विन बनी 'संजीवनी बूटी'

दुनियाभर में कोरोना वायरस की अब तक कोई दवा नहीं बनी है लेकिन मलेरिया के इलाज में काम आने वाली हाइड्रॉक्सीक्लोरोक्विन को मौजूदा समय में काफी कारगर बताया जा रहा है। इसी के चलते भारत ने मलेरिया के इलाज में काम आने वाली हाइड्रॉक्सीक्लोरोक्विन के निर्यात पर रोक लगा दी थी।

अमेरिकी राष्ट्रपति डोनाल्ड ट्रंप के बयान के बाद भारत ने दवा के निर्यात से बैन हटा दिया है। ब्राजील ने मुश्किल वक्त में भारत के द्वारा की जा रही मदद के लिए प्रधानमंत्री नरेंद्र मोदी का धन्यवाद किया है। उन्होंने इसकी तुलना रामायण की उस घटना से की है, जहां हनुमान संजीवनी लाकर लक्ष्मण की जान बचाते हैं।

हाइड्रॉक्सीक्लोरोक्विन कितनी कारगर ?

एक अध्ययन के मुताबिक हाइड्रॉक्सीक्लोरोक्विन के साथ एजिथ्रोमाइसिन का कॉम्बिनेशन कोरोना के असर को कम कर सकता है। इस रिपोर्ट में हाइड्रॉक्सीक्लोरोक्विन के साथ एजिथ्रोमाइसिन के इस्तेमाल को 'अनकंट्रोल बेसिस' बताया गया है। इससे साफ है कि इस कॉम्बिनेशन को औपचारिक इलाज ना माना जाए।

भारत की शीर्ष मेडिकल रिसर्च संस्था ने क्या कहा?

इंडियन काउंसिल ऑफ मेडिकल रिसर्च के डायरेक्टर जनरल बलराम भार्गव ने 23 मार्च को बताया, "हाइड्रॉक्सीक्लोरोक्विन का इस्तेमाल सिर्फ हास्पिटल वर्कर करेंगे जो कोविड-19 के मरीजों की देखभाल कर रहे हैं। या फिर अगर किसी के घर में कोई कोरोना संक्रमित व्यक्ति है तो उसकी देखभाल करने वाला ही इस दवा का सेवन करे।"

इसके अलावा ICMR ने एक प्रेस रिलीज जारी करके बताया है कि 'नेशनल टास्क फोर्स कोविड-19 का गठन किया गया है। हाइड्रॉक्सीक्लोरोक्विन दवा वहीं ले सकते हैं जो कोविड-19 के ज्यादा जोखिम में हों।' अस्पताल में काम करने वाले वो कर्मी जो कोरोना वायरस से संक्रमित मरीज का इलाज कर रहे हों या जिनके घर कोई किसी शख्स को कोरोना पॉजिटिव पाया गया हो तो उससे संपर्क में रहने वाले भी इस दवा का सेवन कर सकता है।

ये दवा मान्यता प्राप्त डॉक्टर की सलाह पर ही दी जाएगी, लेकिन अगर इस दवा को लेने वाले व्यक्ति को कोरोना के लक्षणों के लक्षणों के अलावा कोई और परेशानी होती है तो उसे तुरंत अपने डॉक्टर को संपर्क करना होगा। ' हालांकि, एजिथ्रोमाइसिन के साथ इस दवा के कॉम्बिनेशन पर भारत में कोई बात नहीं कही गई है।

आर्सेनिक एलबम 30 में कितना दम?

भारत के स्वास्थ्य मंत्रालय के मुताबिक कोरोना वायरस का इलाज अभी तक नहीं मिल पाया है। देश में एक होम्योपैथिक दवा की भी फोटो और दवा का नाम खूब वायरल हो रहा है। इसमें दावा किया जा रहा है कि यह दवा कोरोना वायरस के इलाज में कारगर है। इस दवा का नाम आर्सेनिक एलबम 30 है।

सोशल मीडिया में चल रहे मैसेज में कहा गया है कि कोरोना वायरस एक तरह का वायरल इंफेक्शन है, जिसको होम्योपैथिक दवा आर्सेनिक एलबम 30 से नियंत्रित किया जा सकता है।

सोशल मीडिया पर वायरल मैसेज में कहा गया है कि कोरोना वायरस का होम्योपैथिक इलाज इससे बीमारी से काफी हद तक बचा सकता है। कोरोना वायरस के लक्षण दिखने पर तुरंत ही डॉक्टर से संपर्क करें। इस बारे में ईटी के रिसर्च करने पर यह पाया गया कि आयुष मंत्रालय के ट्विटर हैंडल पर इस महीने इस तरह की कोई जानकारी उपलब्ध नहीं है। मंत्रालय ने कोरोना वायरस से बचाव के लिए कोई दवा खाने की सलाह भी नहीं दी है।

WHO ने भी कहा, 'बिना परीक्षण वाली' दवाओं का इस्तेमाल खतरनाक

कोरोना वायरस (COVID-19) की गिरफ्त में आकर विश्वभर में सैकड़ों लोगों की जान रोजाना जा रही है। समस्या ये है कि इस वायरस से लड़ने के लिए अभी तक कोई दवा या वैक्सीन ईजाद नहीं की जा सकी है।

कई अन्य रोगों में इस्तेमाल होने वाली दवाओं का इस्तेमाल कोरोना वायरस से पीड़ित लोगों पर किया जा रहा है। हालांकि, विश्व स्वास्थ्य संगठन (WHO) ने इसे लेकर पूरे विश्व को चेतावनी दी है कि ऐसा करना खतरनाक साबित हो सकता है।

विश्व स्वास्थ्य संगठन ने चेतावनी दी कि कोविड-19 के उपचार में बिना परीक्षण वाली दवाओं का इस्तेमाल खतरनाक हो सकता है और इससे झूठी उम्मीदें जग सकती हैं। डब्ल्यूएचओ के प्रमुख टी. ए. गेब्रेयेसस ने प्रेस कॉन्फ्रेंस के दौरान कहा, 'देखिए, बिना सही साक्ष्य के बिना परीक्षण वाली दवाओं का इस्तेमाल करने से झूठी उम्मीदें जग सकती हैं। यह लाख के बजाए ज्यादा नुकसान कर सकती हैं और आवश्यक दवाओं की कमी हो सकती है, जिनकी जरूरत अन्य बीमारियों के उपचार में होती हैं।'

कब तक बनेगा टीका?

ये सवाल लगातार उठ रहा है कि कोरोना वायरस से जान बचाने वाली दवा या टीका कब तक बन जाएगा। इसके लिए रिसर्च पूरे जोरों से चल रही है। वैज्ञानिक अभी जानवरों पर रिसर्च की स्टेज पर हैं। इस साल के अंत तक इंसानों को इससे फायदा मिलने की उम्मीद कर रहे हैं। वैज्ञानिकों का दावा है कि वैक्सीन आने में एक साल का वक्त लग सकता है।

वैज्ञानिकों ने इस साल कोरोना वायरस के लिए वैक्सीन बना भी ली, तो भी इसका बड़ी संख्या में उत्पादन होने में वक्त लगेगा।

<https://economictimes.indiatimes.com/hindi/news/is-corona-medicines-available-in-market/articleshow/74473753.cms>

डाउन टू अर्थ

Fri, 10 April 2020

स्वस्थ लोगों के हृदय को भी नुकसान पहुंचा सकता है कोरोनावायरस: रिसर्च

शोध के अनुसार जिन लोगों को पहले से कोई हृदय सम्बन्धी विकार नहीं है,

कोरोनावायरस उनके दिल को भी नुकसान पहुंचा सकता है

मधुमिता पॉल, ललित मौर्या

कोरोनावायरस जोकि दुनिया भर के लिए एक मुसीबत बना हुआ है। इसके चलते दुनिया के लाखों लोग अस्पताल में भर्ती हैं। जबकि दुनिया की आधी से ज्यादा आबादी अपने घरों तक ही सीमित रहने को मजबूर है। उस कोविड-19 से ने केवल सांस सम्बन्धी बीमारी और फेफड़ों के संक्रमण का खतरा ज्यादा है। बल्कि हाल ही में छपे एक शोध से पता चला है कि यह वायरस हृदय को भी नुकसान पहुंचा सकता है।

यहां तक कि जिन लोगों को पहले से कोई हृदय सम्बन्धी विकार नहीं है यह उनको भी अपना शिकार बना सकता है।

यह शोध यूनिवर्सिटी ऑफ टेक्सास हेल्थ साइंस सेंटर के शोधकर्ताओं द्वारा किया गया है, जोकि [जर्नल जामा कार्डियोलॉजी में प्रकाशित](#) हुआ है। यह शोध जनवरी से फरवरी के बीच चीन के वुहान शहर में किया गया था। जिसमें कोरोनावायरस से संक्रमित 416 मरीजों का अध्ययन किया गया था। इसके अनुसार इन संक्रमित लोगों में से 19.7 फीसदी (82) लोगों के हृदय को नुकसान पहुंचा था। जिसके कारण उनमें संक्रमण का असर जानलेवा हो गया था।

वहीं इन 82 लोगों में से करीब 51.2 फीसदी (42) लोगों की मृत्यु हो गयी थी। जबकि जिन लोगों के हृदय को नुकसान नहीं पहुंचा था उनमें मृत्युदर केवल 4.5 फीसदी ही थी। जिसका सीधा मतलब है कि कोविड-19 से संक्रमित जिन लोगों को हृदय सम्बन्धी चोट पहुंची थी उनमें मृत्युदर कहीं ज्यादा थी।

गौरतलब है कि कार्डियक इंजरी जिसे मायोकार्डियल इंजरी के नाम से भी जाना जाता है। तब होती है जब हृदय की मांसपेशियां क्षतिग्रस्त हो जाती है। आमतौर पर रक्त के प्रवाह की कमी के कारण ऐसा होता है। सामान्यतः ऐसी स्थिति तब बनती है जब किसी मरीज को दिल का दौरा पड़ता है।

पहले ही हृदय रोग से जूझ रहे लोगों को ज्यादा है कोविड-19 से खतरा

इस अध्ययन के प्रमुख लेखक और यूनिवर्सिटी ऑफ टेक्सास में कार्डियोलॉजी के सहायक प्रोफेसर मोहम्मद माजिद ने बताया कि "इसकी सम्भावना है कि जिन लोगों को पहले से कोई हृदय सम्बन्धी विकार नहीं है। उनकी भी हृदय की मांसपेशी कोरोनावायरस से प्रभावित हो सकती है। "कुल मिलाकर हम यह कह सकते हैं कि कोविड-19 से संक्रमित किसी भी मरीज में हृदय की मांसपेशियों क्षतिग्रस्त हो सकती हैं। पर इस बात का खतरा उन लोगों में ज्यादा होता है जो पहले से ही किसी हृदय रोग से जूझ रहे होते हैं।"

उनके अनुसार हालांकि कोविड-19 के चलते हृदय पर असर कितना घातक होगा और वो कितनी अवधि तक बना रहेगा यह ज्ञात नहीं है। जब तक उसका उपचार नहीं मिलता, ठीक-ठीक नहीं कहा जा सकता। यह अभी भी शोध का विषय है, जिस पर और ज्यादा अध्ययन करने की जरूरत है।

इसके अलावा जिन लोगों में कोरोना वायरस के कम लक्षण देखने को मिले हैं उनमें कार्डियक इंजरी की सम्भावना भी कम होती है। साथ ही यह भी स्पष्ट नहीं हो पाया है कि कोविड-19 सीधे तौर पर हृदय पर प्रभाव डालता है या नहीं। पर इतना स्पष्ट है कि कोविड-19 से हृदय को नुकसान पहुंच सकता है। जिसके कारण रोगी की मृत्यु भी हो सकती है।

प्रोफेसर माजिद के अनुसार, न केवल कोविड-19 बल्कि इन्फ्लूएंजा और सार्स जैसी अन्य सांस की बीमारियां के चलते भी हृदय को नुकसान हो सकता है। चाइनीज सेंटर फॉर डिजीज कंट्रोल एंड प्रिवेंशन (सीसीडीसी) द्वारा किये गए एक अन्य शोध से भी यही बात सामने आयी है। यह शोध 30 दिसम्बर 2019 से 11 फरवरी 2020 के बीच चीन में किया गया था। जिसके अनुसार कोविड-19 के 10.5 फीसदी मरीजों की मौत दिल की बीमारी के कारण हुई थी।

<https://www.downtoearth.org.in/hindistory/health/communicable-disease/coronavirus-can-also-damage-the-heart-of-healthy-people-research-70378>