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**Short Report**

**PREVENTIVE MEASURE TO AVOID REMISSION of COVID-19 INFECTION**

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**Abstract**

This Review article provides important guidance on infection prevention and control (IPC) strategies for medical staffs and other populations during health care when coronavirus disease (COVID-19) is suspected or confirmed, also provides hint on Cell biology. Genetics, transmission and clinical outcome. In this updated version, some precautions and guidelines from an expertise visions have been arranged to decrease the infections level and spreading of COVID-19.

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SARS-CoV2 virus is among a large family of viruses called the Corona virus which is characterized by a spherical shape under electron microscope and carries on its surface pointed crown-like heads known in English as crown, and in Latin as Coronam [1]. Due to its genetic similarities with the virus (SARS-COV), the new 2019-nCoV was known as 2019 novel coronavirus, and firstly was discovered in China in late 2019 and world health organization (WHO) named it SARS-CoV-2 that caused the disease named (COVID-19) [2,3]. SARS-CoV-2 genetic organization was described as a single strand RNA+ about 29 kb containing 38% G+C content, encoding 9,860 amino acids, it's Genome was characterized by two flanking untranslated regions that described by the 5'UTR -265 nucleotides- and the 3' UTR -358 nucleotides-long [4]. SARS-CoV-2 infected the target cells by attachment to their specific cellular receptor on the surface known as angiotensin converting enzyme 2 (ACE2) [5]. The corona viral proteins were characterized by nucleocapsid protein (N), membrane glycoprotein (M), and spike glycoprotein (S), COVID-19 differs from other coronaviruses by encoding an additional glycoprotein that has acetyl esterase and hemagglutination (HE) properties [6].

Often COVID-19 can be transmitted from human to human through close contact that occurs primarily when an infected person sneezes, cough, talk, and through the respiratory droplets produced like influenza and other respiratory pathogens spreading [7]. Today, it is clear that the clinical spectrum of SARS-CoV-2 varying from asymptomatic carriers to severe respiratory failures that requiring treatment and follow up in intensive care unit to avoid fatal

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cases and multi-organ dysfunction syndromes [8].

Till now, No final vaccinations and treatments have been discovered so currently, social distancing, travel restrictions, preventive actions, precautions, implementation of infection control guidelines and home quarantine (home self-isolation) when confirmed, or suspected (have any of disease's symptoms) are the golden solution to avoid SARS-CoV-2 pandemic spreading. On the contrary, other problems should be taken in consideration such as the demand for medical supplies and food resources due to panic-buying and stock piling [9].

In this review article, we will concise the simple and accurate preventive measures points to decrease the spread of infection.

### **Proper hand washing technique and hand disinfection with 70% alcohol**

One of the most crucial preventive actions to combat COVID-19 infection, hands should be washed regularly with soap and water for 30 seconds and a highly protection medical masks should be used. The ideal method for proper hand washing is Dampening it with fresh water after opening the water faucet with a tissue or using the elbow, then, a sufficient amount of soap on the palm of the hand and be sure to penetrate the soap between fingers with rubbing and make sure the soap reaches the back. The total time for washing hands should be from 20 to 30 seconds, and then the soap should be disposed with clean tape water [10]. An appropriate amount of 70% alcohol should be put on the hand palms with rubbing, then alcohol spreading over the surface and between the fingers until dryness (time taken from 20 to 30 seconds) [11].

### **Personal Protective Equipment (PPE)**

Its restriction varies according to the place of use, as health care practitioners have to wear it all (mask, gloves, coat, medical suit, scrub, overhead, overshoes, goggle to protect the eye), while as protection for ordinary people, gloves (it is not recommended to use them as it is a microbes magnet), and the mask (one of the most important tool against the virus) where It was found that wearing the mask is the most vital preventive action to avoid the infection spread, and this conclusion is based on the reality of death figures in many countries where the virus has spread at the same period of time, as by comparing the figures, it was found that the number of deaths in countries that committed to wearing the mask is much lower than in countries that did not commit to wear it [12].

### **Some tips for health care providers**

Before wearing PPE, hands must be washed correctly as mentioned previously, and disinfected with 70% alcohol. PPE wearing must be in descending order (from top to bottom), so the last piece that will be worn is the over shoes. According to medical coat, medical Suit, and scrubs; high sleeves are highly recommended to be tightly closed bracelets to prevent infection spread. All of health care providers must wear latex gloves before contacting each patient, and should be replaced if any cuts or damages appear on it. Double gloving is highly recommended with suspicious and/or infected patients, also office boys must wear duties heavy gloves before doing any tasks. the N95 mask test should be done firstly as It is important to be well fit on the nose and mouth (ways of infection's entrance routs), and the water resistant dark color must to be the outer and the other light color must to be inner and the folds direction have to be down and when disposed of it this will be done by putting it in infectious waste without touching the outer external side [13].

There are several types of masks depending upon the degree of protection; one of the best types is N95. The goggles must be worn as they protect eyes (one method of infection's transmission) from the infection. The over shoes must cover the entire shoe with its strap, and it must be replaced immediately if any cut appears on it. The overhead must be worn to cover the hair, also wearing the face shield is highly recommended. Medical samples as blood, urine, etc. must be transported safely from the sampling or inpatient units to the technical units by placing them in safety biological hazard bags, and placed inside an ice box [14].

### **PPE Safe disposal method**

The safe disposal of PPE is a crucial step of infection prevention, as it will be a source of infection after usage. After finishing the tasks PPE should be disposed of in the hazardous waste (infectious waste "red bag"), and the gloves removal should be the last step, then wash hands properly, and finally disinfect them With 70% alcohol. It was found that the droplets loaded with virus stay on surfaces and paper (as medical reports, scan films, and or doctors prescriptions) for long time , so cautions must be taken when dealing with it (gloves must be worn, washing, and disinfectant of hands must be done) in health care organizations. Also any personal items such as mobile phones, pen, car keys, and laptops should not be exchanged, especially among medical staff. For health care practitioners is better to cover their cellphones with plastic cover during working hours then discard it after finishing their tasks [15,16].

### **Disinfection of the surfaces and floors with diluted 0.05% chlorine**

Disinfection is carried out with diluted chlorine (0.05%) (Surfaces, walls and/ or floors), by one-direction movement technique to avoid microbes transmission by using clean dressing. Mixing of chemical compounds as detergents, disinfectants, and sanitizing reagents, etc. can be risky and sometimes fatal as this may leads to production of a new compound that may have serious effects on the human health especially in the respiratory system and may have a very dangerous toxicity effect which threaten the life [17].

### **Dealing with purchases safely for infection prevention**

Corona virus was found to live in the surrounding air, metals and plastic with an infected aerosol for long-times. So it is highly appreciated to shopping enough for two to four weeks to reduce the duration of presence in the markets, and it is preferable to replace it by the home delivery service [18]. Never let the elderly people or who suffer from chronic diseases to go shopping as they are more susceptible to disease more than healthy young individuals, additionally any person feels any symptoms of respiratory infection must be isolated at his home. The mask must be worn during shopping, once you go home, discard it safely, and wash the hands with soap with proper method, then specify a place as a table which is clean and dry for purchases disinfection by using alcohol 70%, or washing with water and soap before storing it. Divide the table into two parts one to place the purchases and the second for items after disinfection [19]. Any items inside covers or carton boxes transfer it in clean bags or containers and discard the external covers, bags and/ or boxes. Vegetables and fruits must be washed carefully under clean tape water then it is preferable to be soaked in diluted vinegar for some time and then dried before storage and use. Cans, cardboard boxes, glasses, water bottles, and Chips cover can be externally washed with suitable washing soap and water properly, and it is possible to disinfect its cover with 70% Alcohol by

one direction wiping by using clean tissues and discard it immediately after finishing in a proper waste. Readymade food not preferred but in case of necessity, discard the bags, boxes, outer wrapping, and any covers and transfer the food to the plates, or containers without touching it by the hands then washing hands is a must before and after eating. It is highly recommended to warm food before eating. Corona viruses have the ability to live under the freezer temperature. Therefore, any food or nutritional products covers must be washed by water and detergent and/ or disinfected with 70% alcohol or replaced it by new plastic covers or bags before their storage in the freezer to avoid virus freezing [20].

### **Home back precautions for virus limitation**

Avoiding touch the surfaces in the house until washing the hands and properly disinfections is very important precaution after returning to home. It is advisable to take off the shoes near the doors and disinfect the shoe sole with tissue wet with diluted chlorine. According to external clothes that exposed to the air should segregated in a basket designated for dirty items and cleaning separately by using hot water and suitable clothes detergent and disinfectant. Special items such as keys, handbag, laptop bag, external mobile cover are placed in a box near the door of the house. It is recommended to take a hot shower or at least washing all parts of the body exposed to air as hands, face, and foot with water and soap thoroughly for a period of 20-30 seconds, making sure to penetrate the soap between fingers, nails and skin folds [21].

### **Home quarantine**

In case of feeling any COVID-19 symptoms such as loss of taste and smell sense (highly specific for Covid-19), coughing, sneezing, temperature elevation, headache, fatigue, GIT symptoms (vomiting, sometimes diarrhea); the patient should be isolated in a separate room (home quarantine), preferably a room with a separate bathroom with no direct contact with others and the house must be ventilated continuously. Recently there are some approved protocols for treatment of the symptoms, so the patients must follow protocol of their country's ministry of Health, food including fresh vegetables and fruits washed and soaked properly in vinegar and clean water and drink plenty of water have been recommended for the patients, and both of the service providers and the patients should wear a highly protective face masks all the time and commitment to the safety distance between them at least 2 meters [22]. For all exposed surfaces, floors, walls, water faucet, bathrooms and doorknobs must be disinfected regularly by diluted chlorine solution during the day. All of the patient's utensils such as dishes, cups, forks, and spoons must be cleaned carefully with hot water and soap after soaked for at least half an hour in boiled water with a suitable disinfectant (safe on human health) and instead the use of disposable tools (one-use) is highly recommended, and must be discarded immediately after use in a suitable waste after putting them in a separate bag and broken them to avoid any further use. It is advisable to disinfect the patient's clothes and linen using proper disinfectant (colored or white textiles chlorine) with hot water. On the other hand, in the case of breathing difficulties symptoms; it is a must to follow the health ministry's policies and call the emergency numbers specified for Covid-19 medical service to help the patient and transfer him to the hospital specified for isolation to implement the treatment protocol after doing all necessary investigations and examination [23].

### General Recommendations

Finally, It was generally recommended for COVID-19 patients should keep good nutrition to boost immunity especially fresh vegetables in abundance, fruits that contain vitamin C and antioxidants, drinking plenty of water and warm fluids and avoiding eating sugar as it was decreased the immunity efficiency, also smoking and alcohol should be avoided as it will lead to the serious of complications in case of infection. Using the tissues or elbow in case of coughing and sneezing and discard the tissue properly then wash or disinfect the hands will avoid the transmission of the infection. It's was highly advisable especially for healthcare professionals to shorten their nails moreover avoid wearing hands accessories as it has collected dust and microbes under it. For safe social distance, the safety distance between persons should be (2 meters at least and recently some updates said 5 meters) must be taken between persons. The most vital concept in the infection control program especially epidemic disease is considering that all people are infected and you must take all precautions as a preventive action to avoid the infection especially in some cases the individuals may asymptomatic (carry the infection without any symptoms), and this is the most serious source of infection transmission. Also it is recommended in money dealing to use the electronic cards for purchases instead of using paper money. Doing sports, and exercises in the regular basis were recommended to enhance the immunity. Otherwise, in case of home working, the persons shouldn't sit in the same position for a long times, should change the sitting positions and taking a break every hour for some minutes. On the other hand, it was advised to take care of the mental health by doing a beneficial things as helping others in the community and support them (family, neighbors, and friends), listening to the music, reading the books, and playing with children at the home, more over avoid the stress and tension by avoiding following the negative news frequently will contribute to psychological support.

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