

COVID-19 and Air purifiers Use

Dear Editor,

I would like to share ideas on air purifiers use for COVID-19 prevention. The air purifier is a widely used tool by many people aiming at prevention during COVID-19 outbreak. Basically, air purifiers have an internal fans for pulling the air in through a series of filters. Filtration occurs at the filters and the airborne particles like dust, pollen, and pathogen are trapped. Ham concluded that “*If there is only one infected person, there is a chance that the infection cluster will increase. Installation of air purifiers may cause new problems, so the control to prevent infection should not lead to a new infection. Therefore, using the air purifier to control the COVID-19 should be approached with caution.*”^[1] The air purifiers are already used in several settings aiming at COVID-19 containment based on a belief that the tool can help get rid of pathogens. The virus might be rodded within the filter of air purifiers and can further cause disease spreading if the filter is not good.^[2] The filter without a good filtration ability might be a possible source of infection.^[2] If there is a poor filtration ability, some pathogens might escape the filtration process. Additionally, many unwanted pathogens might be collected at the filters and it requires good management for destroying the used filters. However, if there is a special filter such as electrostatically charged nanofilter or high-efficiency particle air (HEPA) filter, it might be helpful for infection control.^[3,4] In the setting that requires the best infection control, such as the operation room, the HEPA filter is recommended.^[5] Based on the concept of aerodynamics, the filtration is not a way that can completely prevent the spreading of pathogens. The correct way is the promotion of airflow or ventilation within the room space. The good ventilation is very important. Although there is a distance it might be useless if ventilation is poor. Finally, it should also be noted that only air purifiers use is not sufficient for infection control, there must be additional preventive tool. The use of air purifiers does not imply that there is no need to follow standard infection control prevention guidelines. Zhao *et al.* proposed that “*air purifiers should be used as a supplementary and precautionary measure after other more significant measures have been taken, such as local source control that includes local pollutants exhaust, filtration, removal and disinfection, as well as the frequent disinfection of the room and furnishing surfaces, and ventilation.*”^[6] Therefore, filters are important. In Ham’s paper, however, the key concern is the concern

that droplets spread farther and wider when there are asymptomatic infections due to the strong airflow from the air cleaner rather than the filter’s ability. In theory, the virus might be filtered by the filtration mechanism if the size of the virus is within the filtration threshold limit.^[7] It is difficult to recommend an air purifier from a public health point of view because the threshold limit value is unknown for SARS-COV-2. Moreover, there is still no officially approved filters to filter for SARS-COV-2 filtration. In light of scarce evidence on the effectiveness of air purifiers, the use of adequate personal protective equipment and room ventilation is still recommended.^[8]

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Received: 03 Jul 20 **Accepted:** 18 Aug 20

Published: 05 Apr 22

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Access this article online	
Quick Response Code: 	Website: www.ijpvmjournal.net/www.ijpm.ir
	DOI: 10.4103/ijpvm.IJPVM_380_20

How to cite this article: Joob B, Wiwanitkit V. COVID-19 and air purifiers use. *Int J Prev Med* 2022;13:47.

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