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Editorial

$PM_{2.5}$, as A Potential SARS-CoV-2 (COVID-19) Carrier

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$PM_{2.5}$, a fine solid aerosols with diameter of 2.5 µm or less is ambient air [1]. There have reports of association between respiratory viruses and $PM_{2.5}$ [2], but no correlation was found between PM's diameter and the virus concentration [1]. $PM_{2.5}$ in indoor environments is derived mainly from common outdoor sources [3-5]. $PM_{2.5}$ with longer lifetime of the particles can be deposited in hospitals' flooring [6,7] and any other surface materials [8,9]. A recent study at a teaching hospital, in Kuala Lumpur, Malaysia revealed that there was highest SARS-CoV-2 (COVID-19) RNA on $PM_{2.5}$ in the number-of-occupant wards [1]. They demonstrated the association between the ward's design and the SARS-CoV-2 (COVID-19)-laden $PM_{2.5}$ (Figure 1 and Figure 2) [1].

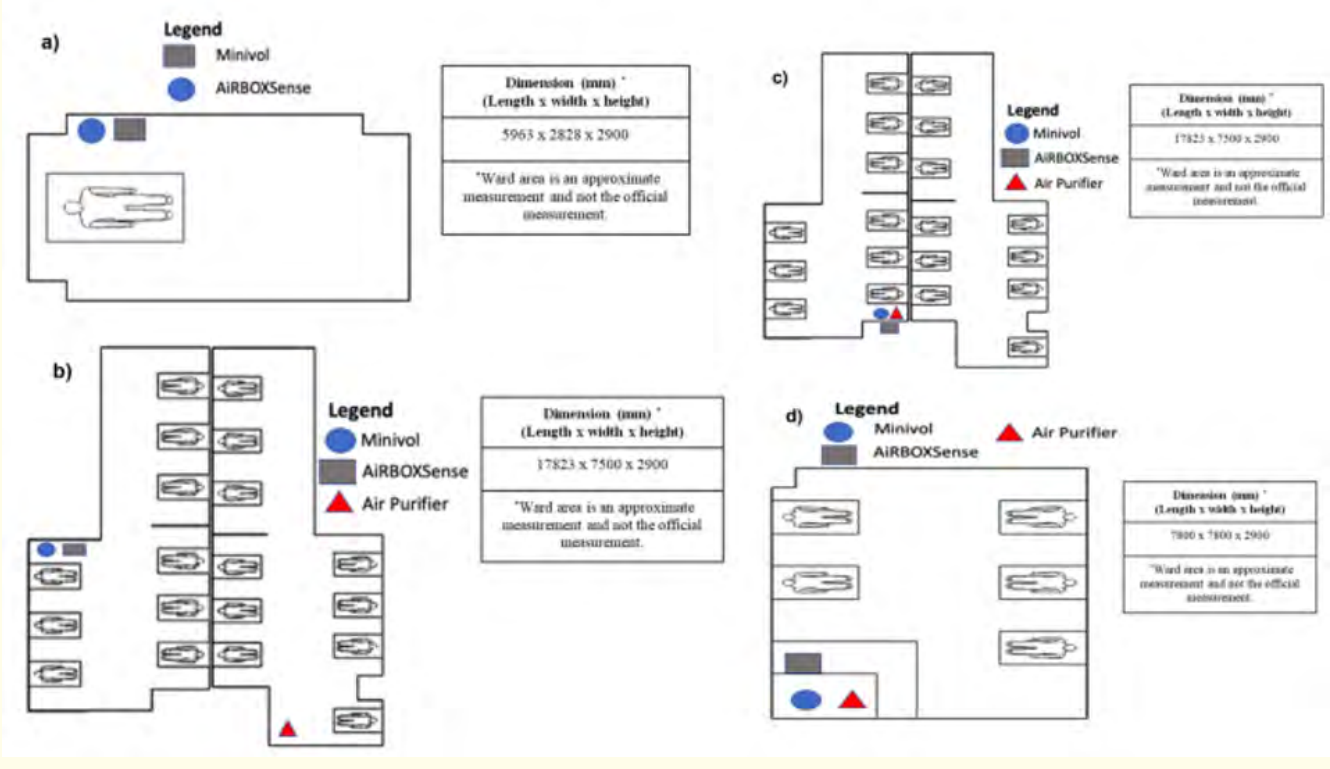

Figure 1: Demonstrating the layout and dimension of the wards with instrumentation deployment a single room A b general ward B, c general ward C and d general ward D. (Note: The beds in the figure does not represent the actual number of beds in the wards, at a teaching hospital in Kuala Lumpur, Malaysia) [1].

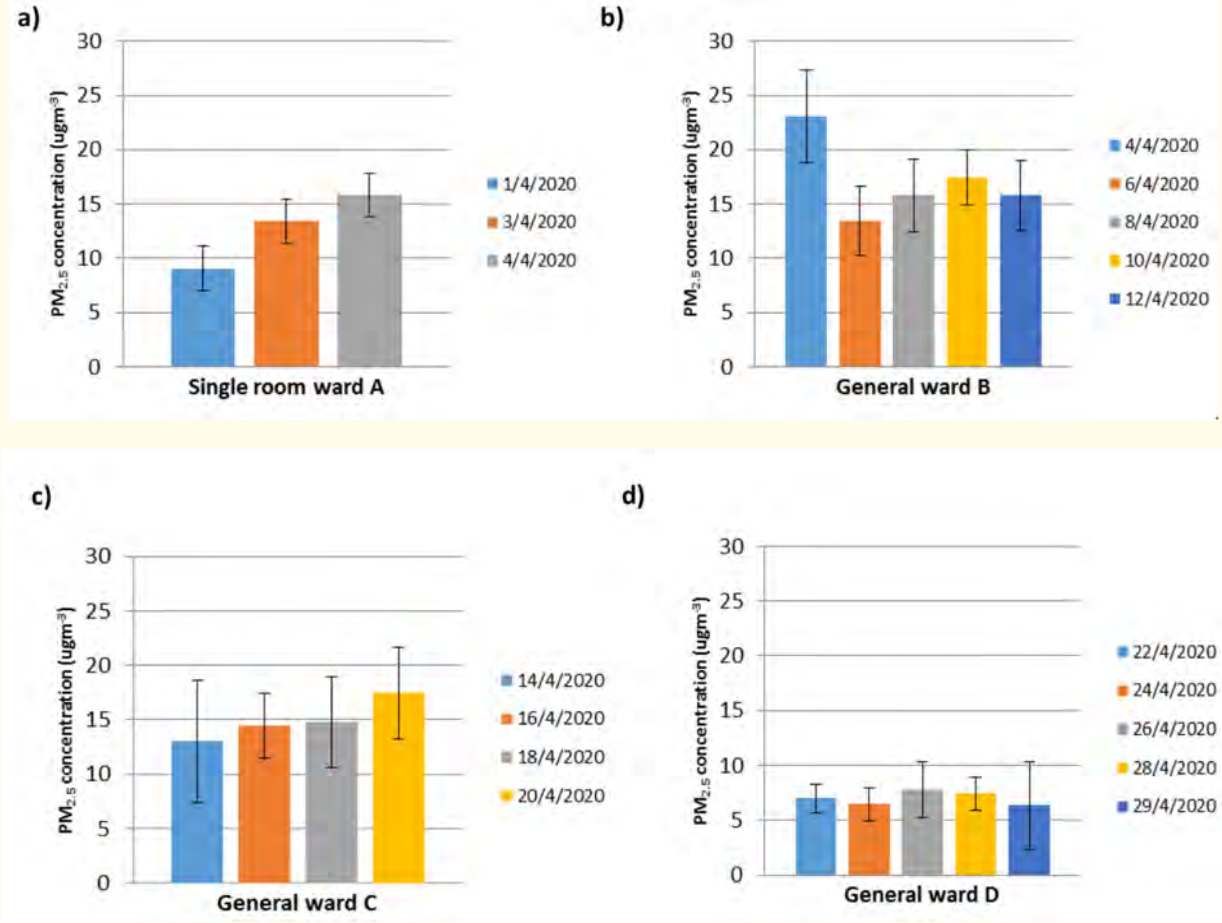

Figure 2: Particulate matter (PM2.5) as a potential SARS-CoV-2 carrier 48 h average concentration $PM_{2.5}$ at a single room ward A b general ward B, c general ward C and d general ward D (at a teaching hospital in Kuala Lumpur, Malaysia) [1].

In conclusion, in an enclosed environment, $PM_{2.5}$ with number of airborne-SARS-CoV-2 (COVID-19) can influence patients' clinical manifestations.

Bibliography

1. Nor NSMd., *et al*. "Particular matter (PM2.5) as a potential SARS-CoV-2 carrier". *Scientific Reports* 11 (2021): 2508.

2. Su W., *et al*. "The short-term effects of air pollutants on influenza-like illness in Jinan, China". *BMC Public Health* 19 (2019): 1319.

3. Nadzir MSM., *et al*. "The impact of movement control order (MCO) during pandemic COVID-19 on local air quality in an urban area of Klang Valley, Malaysia". *Aerosol and Air Quality Research* (2020).

4. Marcazzan GM., *et al*. "Characterization of PM10 and PM2.5 particulate matter in the ambient air of Milan (Italy)". *Atmospheric Environment* 35.27 (2001): 4639-4650.

5. Zhang L-Y and Cao F. "It is time to tackle PM2.5 air pollutants in China from biomass-burning emission?" *Environmental Pollution* 202 (2015): 217-219.

6. Wang X., *et al*. "Hospital indoor PM10/PM2.5 and associated trace elements in Guangzhou, China". *Science of The Total Environment* 366.1 (2006): 124-135.

7. Gemenetzis P., *et al*. "Mass concentration and elemental composition of indoor PM2.5 and PM10 in University rooms in Thessaloniki, northern Greece". *Atmospheric Environment* 40.17 (2006): 3195-3206.

8. Qian J., *et al*. "Estimating the resuspension rate and residence time of indoor particles". *Journal of the Air and Waste Management Association* 58.4 (2012): 502-516.

9. Liu C., *et al*. "Influence of natural ventilation rate on indoor PM2.5 deposition". *Building and Environment* 144 (2018): 357-364.