



Comment

# Comment on Abdul Jabbar et al. Air Quality, Pollution and Sustainability Trends in South Asia: A Population-Based Study. *Int. J. Environ. Res. Public Health* 2022, 19, 7534

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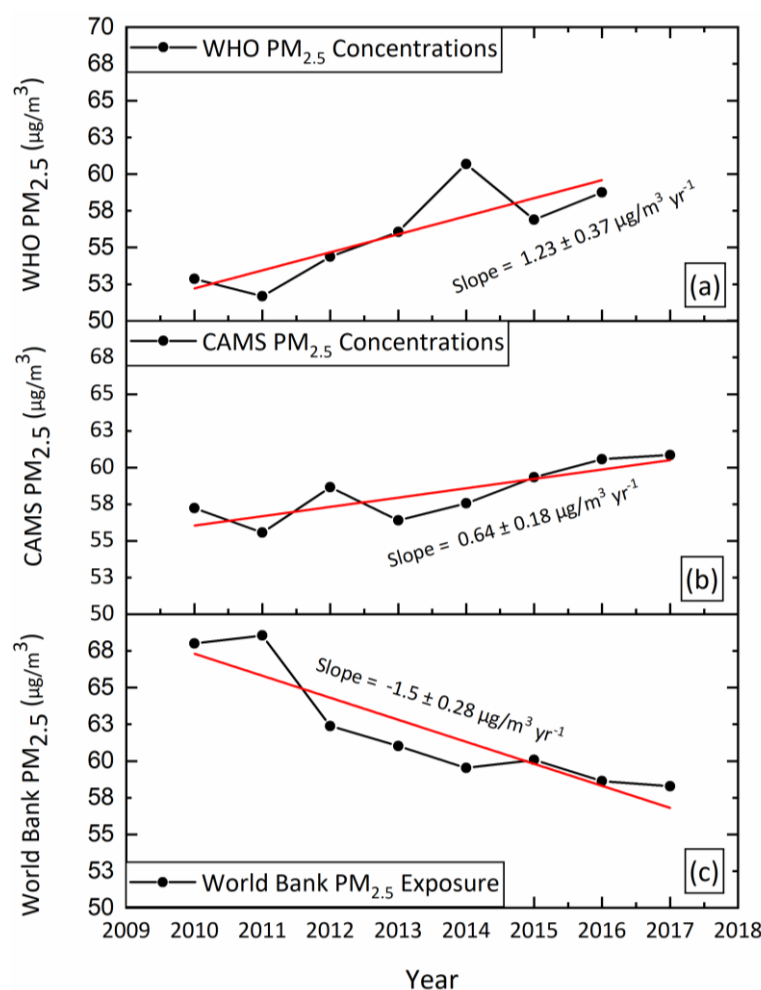
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This comment discusses the use of PM<sub>2.5</sub> (mass concentration of fine particulate matter with an aerodynamic diameter less than 2.5 microns) data in the recently published article entitled “Air Quality, Pollution and Sustainability Trends in South Asia: A Population-Based Study” by Abdul Jabbar et al. [1]. The authors have used two types of PM<sub>2.5</sub> data, i.e., PM<sub>2.5</sub> concentrations and PM<sub>2.5</sub> exposure data. The source of PM<sub>2.5</sub> concentration is not explicitly mentioned; however, the article published by Upadhyay et al. [2] is cited in Figure 4. Upadhyay et al. mentioned that PM<sub>2.5</sub> concentrations were obtained from the ground-based air quality monitoring stations installed at the US embassies in major cities in South Asian countries. These concentrations are limited to specific cities and do not represent country-level air pollution scenarios. The purpose of this comment is not to discuss the PM<sub>2.5</sub> concentrations provided by the US embassies, but instead to comment on the use of the PM<sub>2.5</sub> exposure data, which are used in Abdul Jabbar et al.’s paper. These exposure data are obtained from the World Bank database (<https://databank.worldbank.org/source/world-development-indicators> (accessed on 17 October 2022)). PM<sub>2.5</sub> exposure (EXP) is related to PM<sub>2.5</sub> concentrations through  $Exp = \sum \{(P_i/P) \times C_i\}$ , where  $C_i$  = annual mean PM<sub>10</sub> or PM<sub>2.5</sub> concentration in sub-population  $P_i$ ,  $P = \sum (P_i)$ , which is the total population in cities with data [3].

It is well established that both PM<sub>2.5</sub> concentrations [4] and PM<sub>2.5</sub> exposure [5] significantly increased in Pakistan during the last few decades. However, the PM<sub>2.5</sub> exposure data reported by Abdul Jabbar et al. [1] do not show substantial variation between 1990 and 2017, and they state that the mean exposure to PM<sub>2.5</sub> in Pakistan over the period was “steady”. We illustrate the discrepancy in Figure 1, which plots the time series of PM<sub>2.5</sub> exposure data (2010–2017) obtained from the World Bank database (which are used by Abdul Jabbar et al. [1]) and PM<sub>2.5</sub> concentrations obtained from both the Copernicus Atmosphere Monitoring Service (CAMS) reanalysis data (2010–2017) and the World Health Organization (WHO) website (<https://www.who.int/data/gho/data/themes/air-pollution/who-air-quality-database>, accessed on 17 October 2022) (2010–2016).



**Figure 1.** Time series of PM<sub>2.5</sub> concentrations obtained from (a) the WHO database (2010–2016) and (b) CAMS reanalysis data (2010–2017). (c) PM<sub>2.5</sub> exposure was obtained from the World Bank database (2010–2017). PM<sub>2.5</sub> concentrations from the WHO website were not available for 2017.

Pakistan is the second-most polluted country among South Asian countries, as reported by the authors [1]. Therefore, reliable and accurate information is required for policymakers and research scientists to mitigate air pollution problems in Pakistan. Thus, further investigation is required to resolve discrepancies between PM<sub>2.5</sub> exposure and concentration data from different sources before they can be used in any scientific research or policy application.

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