

# Hubungan Konsentrasi Particulate Matter (PM10) dengan Jumlah Kasus Asma di Jakarta Pusat Pada Saat Sebelum dan Selama Pandemi Covid-19 (Tahun 2018-2022) = Relationship between Particulate Matter (PM10) Concentration and the Number of Asthma Cases in Central Jakarta Before and During the Covid-19 Pandemic (2018-2022)

Alfi Kamelia Amany, author

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## Abstrak

Asma merupakan penyakit inflamasi saluran napas kronis yang ditandai dengan gejala pernapasan seperti mengi, dispnea, batuk, dan sesak dada. Selama pandemi Covid-19 (2020 – 2022) jumlah kasus asma di DKI Jakarta termasuk Jakarta Pusat mengalami penurunan jika dibandingkan dengan sebelum pandemi terjadi (2018-2019). Hal yang sama juga terjadi pada penurunan polusi udara (PM10) yang menjadi salah satu penyebab penyakit asma. Penelitian ini bertujuan untuk mengetahui hubungan konsentrasi PM10, suhu udara, kelembaban udara, dan curah hujan dengan jumlah kasus asma di Jakarta Pusat pada waktu sebelum (2018-2019) dan selama (2020-2022) pandemi Covid-19 dengan menggunakan desain studi ekologi time-trend. Metode analisis dilakukan dengan uji beda 2 rata-rata, uji korelasi, dan uji regresi linear berganda. Penelitian ini menggunakan data sekunder yang berasal dari Dinas Kesehatan Provinsi DKI Jakarta, BMKG wilayah Kemayoran, dan website BMKG. Hasil penelitian menunjukkan, terdapat perbedaan rata-rata kasus asma, konsentrasi PM10, dan curah hujan yang signifikan antara sebelum (2018-2019) dan selama (2020-2022) pandemi Covid-19 ( $p = 0,000$ ;  $p = 0,023$ ;  $p = 0,050$ ). Selain itu, uji korelasi menunjukkan bahwa tidak terdapat hubungan yang signifikan antara konsentrasi PM10 ( $p = 0,156$ ;  $r = 0,210$ ), suhu udara ( $p = 0,883$ ;  $r = 0,019$ ), kelembaban udara ( $p = 0,380$ ;  $r = -0,115$ ), curah hujan ( $p = 0,154$ ;  $r = -0,186$ ) dengan kasus asma seluruh tahun (2018-2022) di Jakarta Pusat. Kesimpulan pada penelitian ini yaitu tidak terdapat hubungan signifikan antara konsentrasi PM10, suhu udara, kelembaban udara, dan curah hujan dengan kasus asma tahun 2018-2022.

.....Asthma is a chronic inflammatory airway disease characterized by respiratory symptoms such as wheezing, dyspnea, coughing and chest tightness. During the Covid-19 pandemic (2020-2022) the number of asthma cases in DKI Jakarta including Central Jakarta has decreased compared to before the pandemic occurred (2018-2019). The same thing also happened to the decrease in air pollution (PM10), which is one of the causes of asthma. This study aims to determine the relationship between PM10 concentration, air temperature, air humidity, and rainfall with the number of asthma cases in Central Jakarta before (2018-2019) and during (2020-2022) the Covid-19 pandemic using an ecological study design (time-trend). The method of analysis was carried out by means of 2 difference test, correlation test, and multiple linear regression test. This study used secondary data from the DKI Jakarta Provincial Health Office, the BMKG for the Kemayoran area, and the BMKG website. The results showed that there were significant differences in average asthma cases, PM10 concentrations, and rainfall before (2018-2019) and during (2020 – 2022) the Covid-19 pandemic ( $p = 0.000$ ;  $p = 0.023$ ;  $p = 0.050$ ). In addition, the correlation test showed that there was no significant relationship between PM10 concentration ( $p = 0.156$ ;  $r = 0.210$ ), air temperature ( $p = 0.883$ ;  $r = 0.019$ ), air humidity ( $p = 0.380$ ;  $r = -0.115$ ), rainfall ( $p = 0.154$ ;  $r = -0.186$ ) with asthma cases throughout the year (2018-2022) in Central Jakarta. The conclusion in this study is that there is no

significant relationship between PM10 concentrations, air temperature, air humidity, and rainfall with asthma cases in 2018 – 2022.