

Indikator Pencemaran Udara Berdasarkan Jumlah Kendaraan dan Kondisi Iklim (Studi di Wilayah Terminal Mangkang dan Terminal Penggaron Semarang)

Irma Dita Kurniawati¹, Ulfa Nurullita¹, Mifbakhuddin¹

¹Fakultas Kesehatan Masyarakat Universitas Muhammadiyah Semarang

ABSTRAK

Latar Belakang : Salah satu penyebab pencemaran udara adalah meningkatnya jumlah kendaraan di Indonesia. Jumlah kendaraan di Indonesia tahun 2016 mencapai 124.215 juta unit, naik 10-15 %. *World Health Organization* (WHO) menyatakan bahwa pencemaran udara merupakan faktor risiko gangguan kesehatan terbesar di dunia, diperkirakan data tahun 2016 sekitar 6,5 juta orang meninggal tiap tahun akibat paparan polusi udara. Faktor yang berhubungan dengan konsentrasi pencemar udara adalah jumlah kendaraan, suhu udara, kelembaban udara, kecepatan angin, hujan, dan topografi. Penelitian ini bertujuan untuk mengetahui hubungan jumlah kendaraan dan kondisi iklim dengan konsentrasi CO, mengukur konsentrasi SO₂ dan NO₂ di Terminal Mnagkang dan Terminal Penggaron Semarang. **Metode:** Jenis penelitian *analitik observasional* dengan pendekatan *cross sectional*. Obyek dan sampel penelitian yaitu udara di lokasi penelitian diukur dalam kurun waktu 1 jam. Variabel bebas dalam penelitian ini adalah jumlah kendaraan, suhu udara, kelembaban udara, dan kecepatan angin, sedangkan variabel terikat adalah konsentrasi karbon monoksida. Analisis data menggunakan *korelasi person* dan *rank spearman*. **Hasil:** Hasil penelitian ini menunjukkan bahwa sebagian besar kendaraan tidak padat (65,0%) dengan nilai p 0,000, sebagian besar suhu udara rendah (55,0%) dengan nilai p 0,221, kelembaban udara tinggi (100%) dengan nilai p 0,006, dan kecepatan angin tenang (100%) dengan nilai p 0,597. Hasil ukur di Terminal Mangkang SO₂ <27,8 $\mu\text{g}/\text{Nm}^3$ dan NO₂ 28,9 $\mu\text{g}/\text{Nm}^3$, di Terminal Penggaron SO₂ <27,3 $\mu\text{g}/\text{Nm}^3$ dan NO₂ 16,0 $\mu\text{g}/\text{Nm}^3$. **Kesimpulan:** Ada hubungan jumlah kendaraan dan kelembaban udara dengan konsentrasi karbon monoksida ($p < 0,05$), tidak ada hubungan antara suhu udara dan kecepatan angin dengan konsentrasi karbon monoksida ($p > 0,05$).

Kata Kunci : Jumlah Kendaraan, Kondisi Iklim, Indikator Pencemaran Udara

ABSTRACT

Background of Study : One of air pollution causes were increasing a number of vehicles in Indonesia. A quantity of vehicles in Indonesia reached to 124.215 million units (uphill to 10-15 %) in 2016 years. *World Health Organization* (WHO) stated that air pollution was a factor of the highest health disturbance risk in the world, it was assumed based on the data in 2016 around 6.5 million people were die every year due to air pollution. A factor which concerned with air pollution concentration of air pollution were a volume of vehicles, air temperature, air humidity, wind rapidity, raining, and typography. This study aimed to know correlation between a number of vehicles and climate's condition with CO concentration, measuring SO₂ and NO₂ concentration at Mangkang and Penggaron's bus station. **Method:** Research design of the study was *Observational analysis* by means of *sectional cross approach*. Object and sample of the study was air that was measured in a hour. Independent variable of the study was a volume of vehicles, air temperature, air humidity, wind rapidity, while dependent variable was carbon monoxide concentration. The data analysis used *correlation person* and *spearman rank*. **Result:** The result of the study showed that most of vehicles were not crowded (65.0%) with the score p 0,000, most of air temperature was low (55,0%) with the score p 0,221, air humidity was high (100%) with score p 0,006, wind rapidity was quiet (100%) with the score p 0,597, the result of measure at Mangkang's bus station SO₂ <27,8 $\mu\text{g}/\text{Nm}^3$ and NO₂ 28,9 $\mu\text{g}/\text{Nm}^3$, and at Penggaron's bus station SO₂ <27,3 $\mu\text{g}/\text{Nm}^3$ and NO₂ 16,0 $\mu\text{g}/\text{Nm}^3$. **Conclusion:** there was correlation; a volume of vehicles and air humidity with carbon monoxide concentration ($p < 0,05$), there was no correlation; air temperature and wind rapidity with carbon monoxide concentration ($p > 0,05$).

Keywords: volume of vehicles, climate's condition, air pollution indicator