

PENGARUH *CAR FREE DAY* (CFD) TERHADAP PENURUNAN KADAR KARBON MONOKSIDA (CO) DAN KEBISINGAN DI SIMPANG EMPAT KLATOS-TUGU ADIPURA, KLATEN

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ABSTRAK

Latar Belakang: Peningkatan jumlah kendaraan bermotor menyebabkan peningkatan pencemaran udara dan kebisingan, terutama di kawasan perkotaan. Karbon monoksida (CO) merupakan salah satu polutan utama hasil pembakaran tidak sempurna kendaraan, sedangkan kebisingan lalu lintas dapat mengganggu kesehatan dan kenyamanan masyarakat. Program *Car Free Day* (CFD) menjadi salah satu upaya untuk mengurangi dampak tersebut, namun efektivitasnya masih perlu dikaji, khususnya di kota menengah seperti Klaten.

Tujuan: Mengetahui dan menganalisis pengaruh *Car Free Day* (CFD) terhadap penurunan kadar karbon monoksida (CO) dan tingkat kebisingan di Simpang Empat Klatos–Tugu Adipura, Klaten.

Metode: Penelitian ini merupakan penelitian deskriptif analitik dengan desain *cross sectional*. Teknik sampling yang digunakan adalah *purposive sampling*. Pengambilan data dilakukan pada tiga kondisi waktu yaitu sebelum CFD (Kamis), saat CFD (Minggu), dan setelah CFD (Rabu) pada pukul 06.00–09.00 WIB di lima titik lokasi. Pengukuran kadar CO menggunakan CO meter dan kebisingan menggunakan *Sound Level Meter*. Analisis data dilakukan secara deskriptif dan statistik menggunakan uji yang sesuai.

Hasil: Hasil penelitian menunjukkan bahwa kadar karbon monoksida (CO) dan tingkat kebisingan cenderung menurun pada saat pelaksanaan CFD dibandingkan sebelum dan setelah CFD. Penurunan ini dipengaruhi oleh berkurangnya jumlah kendaraan bermotor selama CFD. Selain itu, faktor lingkungan seperti kepadatan lalu lintas, vegetasi, dan bangunan juga memengaruhi variasi kadar CO dan kebisingan di setiap lokasi.

Kesimpulan: Terdapat pengaruh pelaksanaan *Car Free Day* (CFD) terhadap penurunan kadar karbon monoksida (CO) dan tingkat kebisingan di Simpang Empat Klatos–Tugu Adipura, Klaten. CFD dapat menjadi salah satu upaya pengendalian pencemaran udara dan kebisingan di wilayah perkotaan.

Kata Kunci: *Car Free Day*; karbon monoksida (CO); kebisingan; lalu lintas; kualitas udara

THE EFFECT OF CAR FREE DAY (CFD) ON THE REDUCTION OF CARBON MONOXIDE (CO) LEVELS AND NOISE LEVELS AT THE KLATOS INTERSECTION – ADIPURA MONUMENT, KLATEN

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ABSTRACT

Background: *The increase in the number of motor vehicles has led to higher levels of air pollution and noise, especially in urban areas. Carbon monoxide (CO) is one of the main pollutants produced from incomplete combustion in vehicles, while traffic noise can negatively affect public health and comfort. The Car Free Day (CFD) program is one of the efforts to reduce these impacts; however, its effectiveness still needs to be evaluated, particularly in medium-sized cities such as Klaten.*

Objective: *To determine and analyze the effect of Car Free Day (CFD) on the reduction of carbon monoxide (CO) levels and noise levels at the Klatos–Adipura Monument Intersection, Klaten.*

Methods: *This study employed a descriptive analytic design with a cross-sectional approach. The sampling technique used was purposive sampling. Data collection was conducted under three different conditions: before CFD (Thursday), during CFD (Sunday), and after CFD (Wednesday), from 06:00 to 09:00 AM at five observation points. CO levels were measured using a CO meter, while noise levels were measured using a Sound Level Meter. Data were analyzed descriptively and statistically using appropriate tests.*

Results: *The results showed that carbon monoxide (CO) levels and noise levels tended to decrease during the implementation of CFD compared to before and after CFD. This reduction was influenced by the decrease in motor vehicle activity during CFD. Additionally, environmental factors such as traffic density, vegetation, and building conditions also affected the variation of CO and noise levels at each location.*

Conclusion: *There is an effect of the Car Free Day (CFD) program on the reduction of carbon monoxide (CO) levels and noise levels at the Klatos–Adipura Monument Intersection, Klaten. Therefore, CFD can be considered as one of the strategies to control air pollution and noise in urban areas*

Keywords: *Car Free Day; carbon monoxide (CO); noise; traffic; air quality*