

“ANALISA KONTAMINASI DEBU, SUHU DAN KELEMBABAN DI RSUD BAYUASIH”

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ABSTRAK

Kontaminasi debu, suhu, dan kelembaban mempengaruhi kinerja alat medis medical kompresor di rumah sakit, maka untuk memastikan bahwa alat medis berfungsi dengan optimal, meningkatkan kualitas perawatan pasien dan mengurangi resiko kesalahan alat medis akibat alat yang tidak berfungsi dengan baik maka dilakukan penelitian ini. Penelitian ini mengkaji dampak kontaminasi debu (PM 1.0, PM 2.5, dan PM-10), suhu, dan kelembaban pada medical kompresor di ruang NICU, ICU, dan PICU RSUD Bayuasih Purwakarta. Data dikumpulkan melalui observasi langsung menggunakan alat ukur DM 106 dengan presisi tinggi pada bulan September 2024, pada pagi, siang, dan malam hari. Analisis deskriptif kuantitatif dilakukan dengan menghitung nilai mean, median, standar deviasi, nilai minimum, nilai maksimum dan analisa statistik korelasi pearson dilakukan untuk mengevaluasi kondisi kontaminasi debu, suhu, dan kelembaban pada alat medis medical kompresor. Hasil penelitian menunjukkan bahwa konsentrasi debu bervariasi antara ukuran partikel, dengan PM 1.0 menunjukkan konsentrasi yang relatif stabil (rata-rata $18,8 \mu\text{g}/\text{m}^3$), sementara PM 2.5 dan PM-10 memiliki konsentrasi yang lebih tinggi (rata-rata $30,5 \mu\text{g}/\text{m}^3$ dan $32,28 \mu\text{g}/\text{m}^3$). Fluktuasi debu lebih tinggi ditemukan di ruang NICU, yang dapat memengaruhi kinerja medical kompresor. Temuan lain menunjukkan adanya korelasi positif kuat antara konsentrasi debu dan suhu ($r = 0,78$), serta korelasi negatif sedang antara debu dan kelembaban ($r = -0,52$). Penelitian ini menyarankan agar RSUD Bayuasih melakukan pemeliharaan preventif pada medical kompresor untuk mencegah akumulasi debu, suhu, dan kelembaban yang dapat memengaruhi kinerja alat. Penelitian lebih lanjut dapat difokuskan pada dampak serupa terhadap alat medis lainnya.

Kata Kunci: Debu, Suhu, Kelembaban, Medical Kompresor, Korelasi Pearson

“ANALYSIS OF DUST, TEMPERATURE, AND HUMIDITY CONTAMINATION AT BAYUASIH GENERAL HOSPITAL”

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ABSTRACT

Dust, temperature, and humidity contamination affect the performance of medical equipment in hospitals. To ensure that medical equipment functions optimally, improving patient care quality and reducing the risk of equipment failure, this study analyzes the impact of these factors on medical equipment performance. The research examines the effect of dust contamination (PM 1.0, PM 2.5, and PM-10), temperature, and humidity on medical compressors in the NICU, ICU, and PICU at RSUD Bayuasih Purwakarta. Data were collected through direct observation using a high-precision DM 106 measuring instrument in September 2024, during morning, afternoon, and evening hours. Descriptive analysis was conducted to evaluate the conditions of dust contamination, temperature, and humidity on the performance of medical equipment. The results showed that dust concentration varied by particle size, with PM 1.0 showing a relatively stable concentration (average 18.8 $\mu\text{g}/\text{m}^3$), while PM 2.5 and PM-10 had higher concentrations (average 30.5 $\mu\text{g}/\text{m}^3$ and 32.28 $\mu\text{g}/\text{m}^3$). Higher dust fluctuations were found in the NICU, which could affect the performance of medical compressors. Another finding indicated a strong positive correlation between dust concentration and temperature ($r = 0.78$), as well as a moderate negative correlation between dust and humidity ($r = -0.52$). This study recommends that RSUD Bayuasih conduct preventive maintenance on medical compressors to prevent dust accumulation, temperature, and humidity that could affect the performance of the equipment. Further research could focus on similar impacts on other medical devices.

Keywords: *Dust, Temperature, Humidity, Medical Compressor, Pearson Correlation*