Kualitas udara ambien dan kejadian ISPA di provinsi DKI Jakarta (analisis Time Trend, Correlate dan Multiple Regression Linear berbasis data hasil pengukuran Meteorologi, ISPU dan Surveilans Aktif Rumah Sakit di Provinsi DKI Jakarta) = Outdoor air quality and ISPA occurrence in DKI Jakarta Province (Analysis of Time Trend, Correlate and Multiple Regressions Linear Based on Data of Meteorology Measurement Result, ISPU and Active Surveillance at Hospital in DK! Jakarta Province)

Edi Margono, author

Abstrak

[ABSTRAK
DKI Jakarta menunjukkan sebanyak 46% dari kasus-kasus penyakit adalah penyakit gangguan pernapasan (ISPA 43%, iritasi rnata l,7% dan asma 1,3%) yang terkait dengan kualitas udara ambien yang tidak memenuhi baku umum dimana polusi udara di DKI Jakarta mengalami fluktuasi dengan beberapa parameter telah melewati nilai ambang batas seperti Ozon, N02 dan nilai ISPU menunjukan bahwa selama setahun hanya terhitung 22 hari udara Jakarta berkualitas baik, 95 hari dinyatakan tidak sehat, dan selebihnya 233 hari berkualitas sedang.
Studi ekologi ini bertujuan untuk mengidentifikasi kualitas udara ambien, kondisi meteorologi., dan kejadian ISPA, mempelajari kecenderungan perubahan kualitas udara ambien, kondisi meteorologi dan mempelajari hubungan antara kondisi meteorologi dengan kualitas udara ambien serta mempelajari hubungan antara kualitas udara ambien, kondisi meteorologi dengan kejadian ISPA.
Alat ukur yang digunakan untuk mengukur kualitas udara ambien menggunakan : FH6-I (5-ray absorbtfon), APSA-360 (Fluorescence UV), APOA-360 (Chelwninescence) dan NDR sedangkan untuk kondisi meteorologi adalah Tennometer; Hygromeierg Cup anenmmeter dan Global Star Pymnameter .
Populasi yang dilibatkan sebanyak 820 data rata-rata harian kualitas udara ambien, kondisi meteorologi dan ISPA dengan sampei sebesar 118 data rata-rata mingguan kualitas udara ambien, kondisi meteorologi dan ISPA.
Dalarm kurun waklu 2006 - Maret 2008 diperolch konscntrasi rata-rata PMN; 65,9 pg/m3, so; 31,1 pg/mi, co 1,1 pg/ma, 0, 51,4 pg/m3, NO; 31,6 pg/ma dan niiai ISPU 72,3. Sedangkan rata-rata suhu 27,6°C, kelembaban 75,6 %, arah angin l54,5° , kecepatan angin 0,7 mls, radiasi matahari l12,0 W/m2 Serta rata~rata angka ISPA sebanyak 54 kejadian.
Hubungan kualitas udara ambien dcngan ISPA didapatkan bahwa SO; mempunyai korelasi positif tcrhadap angka ISPA. PM|0_ 03, ISPU mempunyai korelasi negatif terhadap angka ISPA. Hubungan kondisi meteorologi dengan ISPA didapatkan bahwa kelembaban, arah angin mempunyai korelasi positif

terhadap angka ISPA. Suhu, radiasi matahari mempunyai korelasi negatif terhadap angka ISPA. Hubungan kondisi meteorologi dengan kualiaias udara ambien didapatkan bahwa suhu mempunyai korelasi poritifdengan PMN, 03, N01 dan ISPU. Kelembaban mempunyai korelasi negatif dengan PM|g, 03, N02 dan ISPU, arah angin mempunyai korelasi PM|0, CO, 03, NCQ, ISPU, kecepatan angin mempunyai korelasi negatif dengan PMN), CO. 01, N02, ISPU, radiasi matahari mempunyai konelasi negatif dengan CO, radiasi matahari mempunyai korelasi positif dengan ISPU.

Disimpulkan bahwa dalam kurun waklu 2006 - Mamet 2008 didapatkan pola angka ISPA mengikuti pola konsentrasi kualitas udara ambien dan kondisi meteorologi hal ini dibuktikan dengan adanya hubungan S0;, dan S0;*O3 Serta SO2*Suhu secara bersamaan mempunyai pengaruh yang besar terhadap ISPA dengan nilai koeiisicn korclasi sebesar 0,616 dan nilai koefisien determinasi Sebesar 0,379 (kuat). Dengan demikian SO;, SO1*O3, dan SO;*Suhu secara bersama-sama berpengaruh signifikan terhadap ISPA Namun konscmrasi CO, N02 , kecepatan angin tidak berhubungan denan kejadian ISPA di DKI Jakarta.

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ABSTRACT

DKI Jakarta indicated 46% of disease cases were respirations problems (ISPA 43%, eye irritation of l,7% and asthma of 1,3%) related to ambient air quality which did not fulfill standard quality where air pollution in DKI Jakarta experienced fluctuation with a few parameter have passed boundary threshold value like Ozone, N02 and ISPA value indicated that Jakarta air had a good quality for 22 days each year, it was not health for 95 days, and it was a medium quality for 233 days.

This purpose of ecology study to identity an outdoor air quality, meteorology condition, and ISPA occurrence, studying a change tendency of outdoor air quality, meteorology condition and studying related between meteorology condition of outdoor air quality and also studying related between meteorology condition of outdoor air quality and ISPA occurrence.

Measurement instruments which are used for measuring outdoor air quality such as FI-I6-l (B-ray absorption), APSA-360 (Fluorescence UV), APOA-360 (Cheluminescence) and NIDR while the instruments which are used for measuring meteorology condition such as Thermometer, Hygrometer Cup Anemometer and Global Star Pyranometer.

Populations which are participated amount of 820 data on daily average of outdoor air quality, meteorology condition and ISPA by samples amount of ll8 data on weekly average of outdoor air quality, meteorology condition and ISPA.

At period of 2006 - March 2008 obtained average concentrations were PM10 65,9p g/rn3,SO1 31,1p g/rn3, co up g/ms, 03 51,4u6§/ma, NO; 3l,6p g/m3 and ISPU value '?2,3. While temperature average was 27, C, dampness was 7S,6%, wind direction is l54,5°, wind velocity was 0,7 mls, sun radiation was 1l2,0

Wim! and also mean number of ISPA was amount 54 occurrences.
Related between outdoor air quality and ISPA indicated that S02 has a positive correlation of ISPA number. PMN, 03, ISPU have negative correlations of ISPA number. Related between meteorology condition and ISPA indicated that dampness, wind direction have positive correlations of ISPA number. Temperature and sun radiation have negative correlations of ISPA number. Related between meteorology condition and outdoor air quality indicated that temperature has positive correlations of PM10, 03, NO; and ISPU. Dampness has negative correlation with PM1u, Og, NO; and ISPU, wind direction has correlation PMID, CO, 03, NO2, ISPU, wind velocity has negative correlation of PMN, CO, 03, N02, ISPU, sun radiation has negative correlation of cobalt, sun radiation has positive correlation of ISPU.
It was concluded that at period of 2006 - March 2008 indicated ISPA number pattern follow pattem concentration of outdoor air quality and this meteorology condition was proved by the existence of related between SO; SO1* SO; and SO2* temperature, at the same time, it has a big effect of [SPA by correlation ooeflicient value was 0,616 and determination coefficient value was 0,379 (strong). Therefore S0;, S0;=, and SO# temperature, at the same time, it has an effect of ISPA significantly. But concentration of CO, NOQ, wind velocity does not relate to ISPA occurrence in DKI Jakarta.
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