DISEASE DISTRIBUTION MAPPING USING GEOGRAPHIC INFORMATION SYSTEM IN MLATI HEALTH CENTER WORKING AREA IN 2024

Agyfani Fauziah[1], Heni Puji Wahyuningsih[2], Abdul Hadi Kadarusno [3]
[123]*Department of Midwifery* Poltekkes Kemenkes Yogyakarta,
Jl. Mangkuyudan MJ III/304, Mantrijeron, Yogyakarta email:
fauziagy5@gmail.com, heni.pujiw@poltekkesjogja.ac.id,
abdul.hadik@poltekkesjogja.ac.id

ABSTRACT

Background: *Tuberculosis (TB) re-emerged as the leading cause of death from an infectious agent in 2023. Indonesia ranks second in global TB cases, with an increasing trend in the Special Region of Yogyakarta (DIY), especially in Sleman Regency. Mlati District is one of the areas with a high number of cases, yet spatial studies remain limited.*
Objective: *Describing the spatial distribution of tuberculosis (TB) cases in the working area of the Mlati Community Health Center, Sleman Regency, in 2024 using a Geographic Information System (GIS).*
Method: *This study was quantitative descriptive research with a cross-sectional design. The subjects were 45 TB patients. Data were taken from SIMPUS and SITB and processed using ArcGIS 10.8 with buffer and kernel density analyses. The variables included Subdistrict, Gender, Age, Education, Occupation, Treatment Outcome, ICD-10 Classification, and Healthy House Inspection status.*
Results: *The subdistricts with the highest number of TB cases are Sinduadi and Sumberadi. The majority of TB cases are experienced by men aged 18–40 years, with a high school education level and unemployed status. Most patients are declared cured, with the most common ICD-10 classification being A15. The majority of cases are found in houses classified as healthy homes. Buffer analysis shows that all cases are within a radius of ≤ 3 km. Average Nearest Neighbor analysis indicates a random distribution pattern of TB in Mlati Subdistrict and Mlati I Health Center, and a uniform distribution in Mlati II Health Center. Kernel density analysis identifies two TB clustering points in Mlati I Health Center and one TB clustering point in Mlati II Health Center.*
Conclusion: *GIS mapping effectively illustrated the spatial distribution of TB cases. These findings suggest that control measures should be focused on high-density cluster areas, particularly Sinduadi and Sumberadi.*

Keywords: *Tuberculosis, GIS, mapping, spatial analysis, ArcGIS, Mlati Health Center.*

PEMETAAN PERSEBARAN PENYAKIT TUBERKULOSIS MENGGUNAKAN SISTEM INFORMASI GEOGRAFIS DI WILAYAH KERJA PUSKESMAS MLATI TAHUN 2024

Agyfani Fauziah[1], Heni Puji Wahyuningsih[2], Abdul Hadi Kadarusno [3]
[123]Jurusan Kebidanan Poltekkes Kemenkes Yogyakarta,
Jl. Mangkuyudan MJ III/304, Mantrijeron, Yogyakarta email:
fauziagy5@gmail.com, heni.pujiw@poltekkesjogja.ac.id,
abdul.hadik@poltekkesjogja.ac.id

ABSTRAK

Latar Belakang: Tuberkulosis (TB) kembali menjadi penyebab kematian utama akibat agen infeksius pada 2023. Indonesia menempati peringkat kedua kasus TB global, dengan tren peningkatan di DIY, terutama di Kabupaten Sleman. Kecamatan Mlati termasuk wilayah dengan kasus tinggi, namun kajian spasial masih terbatas.

Tujuan: Mendeskripsikan persebaran spasial kasus Tuberkulosis (TB) di wilayah kerja Puskesmas Mlati, Kabupaten Sleman, tahun 2024 dengan menggunakan Sistem Informasi Geografis (SIG)

Metode: Penelitian deskriptif kuantitatif dengan desain *cross sectional*. Subjek penelitian 45 penderita TB. Data diambil dari SIMPUS dan SITB dan diolah menggunakan ArcGIS 10.8 dengan analisis *Buffer* dan *Kernel Density*. Variabel meliputi Kelurahan, Jenis Kelamin, Umur, Pendidikan, Pekerjaan, Hasil Pengobatan, Klasifikasi ICD-10, dan Inspeksi Rumah Sehat.

Hasil: Kelurahan dengan kasus TB terbanyak adalah Sinduadi dan Sumberadi. Mayoritas kasus TB dialami oleh Laki-laki umur 18 - 40 tahun, dengan tingkat pendidikan SLTA dan status pekerjaan Tidak Bekerja. Sebagian besar pasien dinyatakan Sembuh, dengan klasifikasi ICD-10 terbanyak adalah A15. Mayoritas kasus ditemukan pada rumah yang tergolong Rumah Sehat. Analisis *Buffer* menunjukkan seluruh kasus berada dalam radius ≤ 3 km. Analisis *Average Nearest Neighbor* menunjukkan pola persebaran TB acak (*random*) di Kecamatan Mlati dan Puskesmas Mlati I, serta tersebar merata di Puskesmas Mlati II. Analisis *Kernel density* mengidentifikasi dua titik pengelompokan TB di Puskesmas Mlati I dan satu titik pengelompokan TB di Puskesmas Mlati II.

Kesimpulan: Pemetaan SIG efektif menggambarkan sebaran TB di Mlati. Pengendalian perlu difokuskan pada wilayah klaster tinggi seperti Sinduadi dan Sumberadi.

Kata Kunci: Tuberkulosis, SIG, pemetaan, analisis spasial, ArcGIS, Puskesmas Mlati.