

ABSTRAK

Penelitian ini dilatarbelakangi oleh tingginya prevalensi stunting di Indonesia, yang mencerminkan ketidakseimbangan gizi anak usia dini. Untuk mengatasi masalah ini, pendekatan teknologi informasi digunakan guna mengidentifikasi kelompok balita berisiko. Data antropometri, yaitu tinggi badan, berat badan, dan usia balita, dikumpulkan dari 34 Posyandu di Puskesmas Peusangan. Metode yang diterapkan adalah *Gaussian Mixture Modeling* (GMM) dengan algoritma *Expectation-Maximization* untuk mengklasterisasi data ke dalam dua kelompok: "Potensi Stunting" dan "Tidak Stunting". Hasil penelitian menunjukkan bahwa beberapa Posyandu dan desa memiliki angka potensi stunting yang tinggi, seperti Posyandu Bungong Seulanga (141 balita) dan desa Pante Gajah (116 balita), dengan prevalensi lebih besar pada balita laki-laki (34,67%) dan usia 52–60 bulan (24,18%). Evaluasi model menggunakan *confusion matrix* pada 1468 data menunjukkan *True Positive* sebesar 958 (65,36%), *False Negative* 4 (0,27%), *False Positive* 503 (34,33%), dan *True Negative* 0 (0%), dengan akurasi sebesar 65,36% dan tingkat kesalahan 34,64%. Kesimpulannya, *Mixture Modelling* efektif untuk klasterisasi dan identifikasi kelompok berisiko, tetapi kurang akurat dalam prediksi individu, dengan bias terhadap kelas "Potensi Stunting" yang perlu diperbaiki pada penelitian lanjutan.

Kata kunci: Klasterisasi, Stunting Balita, Gaussian Mixture Model, Puskesmas Peusangan.

ABSTRACT

This research is motivated by the high prevalence of stunting in Indonesia, which reflects nutritional imbalances in early childhood. To address this issue, an information technology approach was employed to identify at-risk groups of toddlers. Anthropometric data, namely height, weight, and age of toddlers, were collected from 34 Posyandu (integrated health posts) at the Peusangan Health Center. The method applied was Gaussian Mixture Modeling (GMM) with the Expectation-Maximization algorithm to cluster the data into two groups: "Potential Stunting" and "Non-Stunting." The results indicate that several Posyandu and villages have high rates of potential stunting, such as Posyandu Bungong Seulanga (141 toddlers) and Pante Gajah village (116 toddlers), with a higher prevalence among male toddlers (34.67%) and the 52–engaging months age group (24.18%). Model evaluation using a confusion matrix on 1,468 data points showed a True Positive rate of 958 (65.36%), False Negative rate of 4 (0.27%), False Positive rate of 503 (34.33%), and True Negative rate of 0 (0%), with an accuracy of 65.36% and an error rate of 34.64%. In conclusion, Mixture Modelling is effective for clustering and identifying at-risk groups but less accurate for individual predictions, with a bias toward the "Potential Stunting" class that requires improvement in future research.

Keywords: *Clustering, Toddler Stunting, Gaussian Mixture Model, Peusangan Health Center.*