Comparative Analysis of the Performance of C4.5 and *K-Nearest Neighbor (K-NN)* Algorithms for the Classification of Toddler ISPA Disease (Case Study of Tlanakan Health Center). Comparative Analysis of the Performance of C4.5 and *K-Nearest Neighbor* (K-NN) Algorithms for the Classification of Toddler ISPA Disease (Case Study of Tlanakan Health Center). Mochammad Choirur Roziqin, S.Kom., M.T (Supervisor)

Riza Maretha Zalsabila Hidayat
Health Information Management Study Program
Department of Health

ABSTRACT

Acute Respiratory Infection (ARI) is a disruption of respiratory function caused by viruses or bacteria that attack the nose to the alveoli. ISPA is the most common infectious disease that causes death (mortality) and morbidity worldwide. The Tlanakan Pamekasan Health Center is a health center with an increase in toddler ISPA cases from 2022-2024. This type of research is quantitative research. The dataset used was 618 data with 8 variables. The test results showed that the comparison of the ratio of *training* data and *testing data,* K value and *type sampling* had an influence on the accuracy value. The accuracy of the C4.5 algorithm was better than the K-NN algorithm in the classification of cases of ISPA under five. This is shown by the accuracy level of the C4.5 algorithm which reached 99.24%, while the accuracy of the K-NN algorithm was 98.71. In addition, based on the *results of the Confusion Matrix,* the C4.5 algorithm also excelled in *precision* and *recall values,* each by 99.56%. Meanwhile, the K-NN algorithm has a *precision* value of 98.99% and *a recall* of 99.49%. The result of the *rule tree* that fever has an effect is the determination of ISPA in toddlers.

Keywords: C4.5 *Algorithm, K-NN Algorithm, Confusion Matrix, ISPA, Performance*