

I. INTRODUCTION

cute kidney injury is a condition in which the kidneys suddenly stop functioning. This can occur due to disrupted blood flow, kidney problems, or urinary tract blockages. Acute kidney injury requires immediate treatment to prevent permanent kidney damage [1]. As of October 18, 2022, acute kidney injury has affected many children aged 6 months to 18 years, with 189 reported cases [2]. This resulted from the cough syrup being contaminated with risky substances such as ethylene glycol (EG), diethylene glycol (DEG), and ethylene glycol butyl ether (EGBE) [3].

As a result of acute kidney failure caused by contaminated cough syrup, the Ministry of Health has issued instructions to investigate cases of acute kidney injury in children. In addition, healthcare professionals and pharmacies have been advised not to prescribe or sell cough syrup medications until an official announcement from the government is made [4]. This issue has been widely discussed on social media platforms, including YouTube, where videos discussing the cough syrup issue have been posted. YouTube users utilize the comment section of these videos to express their opinions on the matter in text form. These opinionated comments can serve as a valuable data source for understanding public sentiment on a particular topic [5]. Therefore, sentiment analysis can be conducted to gauge public response to the issue of cough syrup causing acute kidney injury in children. However, it should be noted that data extracted from YouTube comments about this issue may face challenges due to data imbalance. In sentiment analysis, the distribution of comments among positive, neutral, and negative opinions might not be proportionally balanced. This can lead to problems in developing an accurate and reliable model for classifying the sentiment of comments. This imbalance can lead to a model that tends to produce results leaning towards the majority sentiment, disregarding minority sentiments that also hold important contributions in the analysis [6].

Sentiment analysis is the computation of sentiment, opinion, and emotion towards an object expressed in text form. This analysis extracts attributes and components within the text and determines whether the related comments are categorized as negative or positive [7]. Sentiment analysis can be performed using various classification methods. One such method involves deep learning, specifically the Convolutional Neural Network (CNN) algorithm and Word2Vec word embeddings for word representations. Word2Vec represents dense vectors that can effectively represent relationships between words in suggestion data. This research achieved a high accuracy rate of approximately 98% [8]. Another study entitled "Text-Based Sentiment Analysis Using LSTM" where LSTM managed to get an accuracy of 85% [9]. Additional sentiment analysis research has explored deep learning for identifying fake news in the Indonesian language. The techniques employed included Convolutional Neural Networks (CNN) and Long Short-Term Memory (LSTM), with Word2Vec for feature extraction. The dataset comprised 1786 news items, of which 802 were factual and 984 were identified as fake news. The findings suggested that the CNN method yielded a test accuracy, precision, and recall rate of 0.88. On the other hand, the LSTM model displayed a test accuracy and precision rate of 0.84 and a recall rate of 0.83. Consequently, the CNN method appeared more effective than the LSTM approach, yet both methods could distinguish between factual and fake news in Indonesian [10].

Based on the description above, this research conducts a sentiment analysis of comments on YouTube videos related to the issue of acute kidney disease syrup medication, using a comparison of Convolutional Neural Network & Long Short-Term Memory algorithms with Word2Vec feature extraction. It's important to note that the data might need to be balanced across sentiments. This can impact the model's learning process, causing it to focus more on the majority sentiment. The dataset is taken from comments on YouTube videos about the syrup medication, on videos owned by Dr. Richard Lee, MARS. The results of this research are expected to provide an understanding of public opinion and the performance of modelling in sentiment analysis related to the issue of acute kidney disease syrup medication in Indonesia on YouTube videos.