

ABSTRACT

Cancer poses a significant challenge within the healthcare domain due to its complexity. Analyzing cancer treatment pathways is crucial to identifying treatments that may be more demanding and protracted for patients and predicting potential outcomes and associated costs. Consequently, it is essential to distinguish between various patient types based on the similar respective activities of treatments. Process mining techniques, which utilize data analytics to understand intricate care processes based on event logs, can enhance comprehension of treatment sequences within different groups. This study aims to explore variations in treatment pathways for breast cancer, perform process discovery techniques, visualize models, and assess their quality through conformance checking of the process model. The proposed approach is implemented through a case study employing a real-world dataset extracted from the Indonesian Health Insurance dataset, where breast cancer diagnoses account for a significant portion (25.8%). This research investigates care pathways of breast cancer within three distinct treatment groups: radiotherapy, chemotherapy, and a combination of both. Notably, chemotherapy emerges as the most common treatment, and the majority of patients fall within the age range of 50 to 59. The outcomes emphasize the applicability of the process mining approach by implementing the control-flow frequency and the time perspective. The sequence of treatments within the chemotherapy and radiotherapy groups exhibits a substantial divergence of 25%. The time perspective detects the average elapsed time, the average remaining time, the average sojourn time, and the average waiting time. This research facilitates recommendations that six treatment procedures can be considered to enhance from a time perspective.

Keywords: Process Mining, Treatment Pathways, Breast Cancer, Indonesia Health Insurance Dataset