ABSTRACT

Non-communicable diseases (NCDs) have become a major challenge in national and global health. NCDs are the leading cause of death in Indonesia, influenced by various behavioural risk factors such as smoking, unhealthy diet and physical inactivity. NCDs can be prevented by reducing the risk factors associated with these diseases, but each province has different non-communicable disease behavioural risk factors, making general policies less effective in reducing the incidence and mortality of NCDs. Grouping provinces based on these risk factors is needed to develop more specific and targeted policies. This study uses the Partitioning Around Medoids (PAM) algorithm that groups n objects into k clusters based on their similar characteristics. The advantage of this algorithm lies in its resistance to outliers because it uses medoids as its cluster centre. Validation of the clustering results was carried out using the Callinski-Harabasz Index and three optimal clusters were obtained with an index value of 11.6833. Cluster 1 consists of 18 provinces with more moderate risk factors with moderate to low risk factors. Cluster 2 consists of 8 provinces with the three highest risk factors, namely smoking, consumption of fatty/cholesterol/fried foods, and less consumption of fruits and vegetables. Cluster 3 consists of 12 provinces with the two highest risk factors, namely consumption of sugary foods and less physical activity.

Keywords: Non-communicable diseases, risk factors, Partitioning Around Medoids