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SIMULATION DESIGN OF DENTAL PRACTICE MEDICAL WASTE MANAGEMENT USING DYNAMIC SYSTEM MODEL APPROACH

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Abstract

Background: Dental practice medical waste endanger lives and the environment. A Previous study reported that the total of solid medical waste produced by dental practice in Pekanbaru City was 4,62 kg/day with an average was 0,3 kg ± 0.07 kg/day. Based on the type of waste produced, 69% was an infectious waste, 27% was toxic waste, and 4% was radioactive waste.
Purpose: To analyze medical waste produced and environmental costs incurred by dentists using several medical waste management policy intervention scenarios in Pekanbaru City.
Methods: Simulation model with a dynamic systems approach. Simulations are conducted from 2018 to 2047.
Results: The reduction percentage over 30 years, it was found the combined between providing training and cooperation with waste management party had the largest reduction of 41,9%. The biggest reduction in environmental cost was the combined scenario of 99,69% followed by a cooperation scenario of 99,62% and training 19,5%.
Conclusion: The most effective model of independent health service solid medical waste management is scenario 3 model because it can reduce the waste produced and reduce costs as well.
Suggestion: Dentists and dental health officers need to take part in regular and continuous medical waste management training in order to change behavior.
Keywords : dentists, cooperation with medical waste management, simulation of the amount of medical waste and environmental costs, dynamic systems, training in medical waste management.

INTRODUCTION

Medical waste management system in Indonesia is regulated based on Minister of Health Regulation No.7 of 2019 [(1)] regarding rules and procedures for managing medical waste in hospitals. The Minister of Health Regulation still regulates the procedures for managing waste in hospital environment and its surroundings, while for medical waste in other health service facilities, especially dental practice waste, there is no statutory policy that regulates it. A study by Singh [(2)] reported that there are no standard rules regarding the management of dental health medical waste either from the government or from dental professional organizations.

The results of a study by Oktavia [(3)] reported that the total amount of solid medical waste produced by dental practices in Pekanbaru City was 4,62 kg/day with average medical waste produced by each dentist was 0,3 kg ± 0,07 kg/day. Meanwhile, based on the type of waste produced, 69% was infectious waste, 27% was toxic waste, and 4% was radioactive waste.