

“Best of Both World”: the amalgamation of fuzzy delphi method with nominal group technique for dengue risk prioritisation decision-making

ABSTRACT

Introduction. Dengue remains a public health threat. Clarifying the characteristics of future threats and prioritising intervention towards the highest risk potential can help to control and prevent dengue outbreaks. However, obtaining a consensus from panels of experts is certainly challenging due to the relative subjectivity of experience. Therefore, this article incorporates the fuzzy Delphi method (FDM) within a nominal group technique (NGT) as a multicriteria decision-making tool for (1) describing the characteristics of socioecological attributes (SEAs) with a high risk of causing dengue outbreak and (2) ranking those SEAs as priorities for intervention. **Material and Methods.** Experts were recruited using a purposive sampling technique. Informed consent was obtained before the start of the study. The NGT process began with an introductory presentation of dengue SEA by the moderator, followed by “silent generation.” Next, each participant provided information in a round-robin fashion. Ideas were collected by the moderator and displayed publicly. All experts were given ample time and space to contribute and justify their ideas without interruption during the discussion step to yield agreeable SEA characteristics. Ultimately, FDM was incorporated in the voting step to ensure rigorous analysis. The study was approved by an ethical committee before its commencement. **Results.** A total of 10 field experts participated in the study, with a median experience of 7.5 years working on a dengue team. The common characteristics of SEA prone to cause dengue outbreaks were the presence of human-made containers, in high quantities, left unattended, and covered from direct sunlight. Apart from that, all eight SEAs passed the triangulation of fuzzy numbers and defuzzification processes. The average fuzzy numbers ranged between 0.500 and 0.780, and the threshold value () ranged from 0.055 to 0.196. Of the potential risk factors identified, experts ranked illegal dumping sites as the most important, followed by old and unused items and construction sites. **Conclusion.** The NGT process successfully helped to obtain a consensus among the expert panels in describing SEA characteristics. Nevertheless, the integration of FDM offered a robust analysis that validated their ranking in dengue risk prioritisation. Therefore, we strongly recommend the application of FDM to be incorporated in any public health decision-making process.