

Understanding hand, foot, and mouth disease (HFMD) in Kinta District, Perak: Environmental factors

Muhamad Nur Na'im, Mohd Shukri, Fatimah Mat Kasim, Bah Binri

Faculty of Health Sciences, UiTM Kampus Puncak Alam, Selangor, Malaysia, Perak State Health Department, Ipoh, Perak

ABSTRACT

Introduction: Outbreaks of HFMD are common in childcare settings, including kindergartens, due to the proximity of children and their tendency to engage in activities that promote the spread of the virus, such as sharing toys and touching contaminated surfaces (Hoang et al., 2019). The potential for outbreaks of HFMD in kindergartens can be particularly concerning due to the high transmission rate of the virus and the potential for severe complications in young children. Therefore, understanding indoor environmental risk factors in kindergartens is crucial for effective prevention and control measures. **Materials and Methods:** Indoor environmental factors (humidity, temperature, CO₂, UV radiation, and air movement) were measured in 25 kindergarten classes using an Air Quality Tester, UV Radiation Monitor, and CFM/CMM Thermo Anemometer. Measurements were compared between outbreak and non-outbreak kindergartens and against DOSH compliance standards. **Results:** Due to consistently zero readings, indoor UV radiation data were excluded from the analysis. Outbreak kindergartens showed higher mean values for temperature (30.29°C), relative humidity (63.43%), and CO₂ mean rank (14.07). Conversely, air movement had a higher mean rank (13.42) in non-outbreak kindergartens. Multiple linear regression indicated no significant association ($p < 0.05$) between these environmental factors and epidemic status. Compliance rates to DOSH standards varied between outbreak and non-outbreak kindergartens. Indoor temperatures and indoor air movement levels are crucial in both outbreak and non-outbreak kindergartens. **Conclusion:** Poor indoor environmental factors may contribute to the increased occurrence and transmission of HFMD in kindergartens. Addressing these factors is essential for effective disease prevention and control.