

## RISK FACTORS FOR DIPHTHERIA DURING THE OUTBREAK IN INDONESIA

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### BACKGROUND:

Diphtheria outbreak in East Java Indonesia has been noted since 2011. Most of the patients were children. Some risk factors were presumed as having the influential contribution

**OBJECTIVE:** To evaluate the risk factors for diphtheria in children during the East Java outbreak 2011-2015

**METHODS:** All children aged under 18 years who were recorded during the outbreak with proven culture results of toxigenic *C. diphtheriae* were recruited as participants. The control group was healthy children that have close contact with diphtheria cases but with negative culture results. All participants were reviewed, visited, interviewed, and underwent physical examinations. Immunization cards were checked. The house and surrounding environment were observed. Pearson chi-square and logistic regression tests were used ( $p < 0.05$  considered as significant).

### RESULTS:

There were 97 patients and 194 controls in the study, mostly lived in the northern and eastern part of the province (86.6%). Most parental education was the elementary school. Incomplete primary diphtheria immunization was significantly found in the case group (68.0 vs 44.3%,  $p < 0.001$ ). Most parents did not have sufficient knowledge about diphtheria and its prevention (83.5 vs 73.2%,  $p = 0.005$ ). Significant risk factors in multivariate analysis were incomplete primary immunization, contacts with seasonal workers, and pesantren (traditional school) dormitory inhabitants. Significant risk factors for incomplete primary diphtheria immunization was the inadequacy of parental knowledge (OR 2.756; 95% CI 1.551-4.897).

**CONCLUSIONS:** The significant risk factors for this outbreak were incomplete primary diphtheria immunization, contact with seasonal workers, and traditional school dormitory status. This data and result finding were not available in this area previously and would become the basis for better outbreak management.

**KEYWORDS:** diphtheria, children, risk factors, East Java, incomplete immunization.