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Factor Affecting of the Diphtheria in East Java: Scoping Review

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ABSTRACT

Diphtheria is an acute infectious disease caused by the *Corynebacterium diphteriae* bacteria. This bacterium will produce a toxin that spreads systemically and attacks the upper respiratory system and can cause damage to the respiratory epithelium. Diphtheria cases in Indonesia increased from 2016 to 2017 by 339 cases and caused outbreaks in Indonesia. The most cases are in East Java Province with the number reaching 48%. This research is a review study. The purpose of this study was to identify the studies that had been conducted related to factors that influence the diphtheria in East Java. The results of the review show the factors that influence the diphtheria in East Java are the level of education, immunization status, physical condition of the home, population density, occupancy density, level of knowledge, and personal hygiene.

Keywords: *Diphtheri, Factor Affecting, Scoping Review.*

Introduction

Diphtheria is an acute infectious disease caused by the *Corynebacterium diphteriae* bacteria. This bacterium will produce a toxin that spreads systemically and attacks the upper respiratory system and can cause damage to the respiratory epithelium. This disease has symptoms of neck pain, fever, sore throat. Diphtheria is often characterized by the growth of a gray membrane that covers the tonsils and the respiratory tract causing difficulty breathing. Diphtheria generally attacks children aged 1-10 years^(7,8,9).

Diphtheria cases in 2016 in Indonesia were 415 cases, while diphtheria cases that died from 415 cases were 24 cases. So, the Case Fatality Rate (CFR) of diphtheria was 5.8%. The highest case in Indonesia, occurred on Java Island. Reported cases of diphtheria in Indonesia, out of 415 cases, 50.2% of them did not get vaccinations. November 2017 recorded 95 regencies/cities reporting diphtheria cases and 11 provinces reporting diphtheria outbreaks in their area⁽¹⁰⁾.

Diphtheria cases increased in 2017. During 2017, diphtheria outbreaks occurred in 170 regencies/cities and 30 provinces. The number of cases in 2017 reached 954 cases with 44 deaths. This case of diphtheria was found in East Java Province with a total of 48%^(11,12,13).

With the most cases in East Java, preventive measures are needed. Prevention can be done by knowing what factors influence the diphtheria. Based on the description of the background, so the purpose of this study was to identify the studies that had been conducted related to factors that influence the incidence of diphtheria in East Java.

Method

This research is a review study. The review was carried out using an electronic database to look for research related to the case of diphtheria. Research search is limited in 2011-2017. The database used is like Google Scholar and ProQuest. The research that will be included in this review focuses on factors in the case of diphtheria in the East Java region.

Results and Discussion

Table 1 shows the research that has been done on factors that influence the case of diphtheria in East Java. Based on the search results on the database obtained as many as six studies that meet the requirements of this review.

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Table 1: Study Literature

Author	Year	Design Penelitian	Sample	Findings (Factor Affecting of Diphtheria)
Arifin, I.F. and Prasasrti, C.I.	2017	Case Control	Case = 8 Control = 40	Tingkat pendidikan, status imunisasi DPT, dan kondisi lingkungan fisik rumah
Mardiana, D.E.	2018	Cross sectional	Secondary data	Imunisasi dasar lengkap dan kepadatan penduduk
Izza, N. and Soenarnatalina	2015	Cross sectional	Secondary data	Imunisasi DPT3
Lestari, K.S.	2012	Case Control	Case = 31 Control = 93	Kepadatan hunian dan pengetahuan ibu
Setiasih, A.	2011	Case Control	Case = 78 Control = 78	Status imunisasi
Lia, A.B.G	2011	Case Control	Case = 14 Control = 42	Higiene personal

Based on table 1, it can be seen that the factors that influence the case of diphtheria in East Java are education level, immunization status, physical condition of the home, population density, occupancy density, level of knowledge, and personal hygiene.

Physical Environmental Conditions of Houses: The results of a review of existing studies showed that respondents who have physical environmental conditions have a relationship with high cases of diphtheria in Bangkalan Health Center in 2016 with an OR of 4.18 which means that people with physical conditions that do not meet the requirements risk 4.18 times diphtheria compared to people with environmental conditions that meet the requirements. The physical environment of this house includes many factors, namely the condition of the walls of the house, the ceiling of the house, the floor of the house, humidity, lighting, ventilation and occupancy density⁽¹⁾.

Research outside East Java also showed the same results that the factors that influence the case of diphtheria are related to the home environment. The type of wall of the house has a significant relationship with the incidence of diphtheria with an OR value of 9.42. The type of floor of the house also has a significant relationship with an OR value of 20.7 which means that the type of floor is a risk factor for diphtheria⁽¹⁴⁾.

Immunization Completeness: The results of the review of existing studies indicate that respondents who did not get complete DPT immunization had a risk of developing diphtheria by 4,667 times greater than respondents who did not get complete DPT immunization⁽¹⁾. The results

of subsequent reviews also show that complete basic immunization can affect the prevalence of diphtheria in East Java by 0.33 times⁽²⁾. The results of the last review, with spatial analysis showed that DPT3 immunization affected the occurrence of diphtheria. Regions that have low DPT3 immunization coverage have a high number of diphtheria⁽³⁾.

Population Density: The results of the review indicate that population density can affect the prevalence of diphtheria in East Java by 0.01 times⁽³⁾. Population density that is not balanced with its area, can result in the emergence of slums so that it can cause infectious diseases such as diphtheria, so the higher the population density in an area, the greater the chance of the spread of diphtheria. In general, diseases that can be transmitted through direct contact occur in communities in areas with high population densities⁽¹⁵⁾. Blum⁽¹⁹⁾ states that environmental factors have a greater influence on public health compared to other factors of 45%.

Education and Knowledge: The results of a review of the research conducted by Arifin (1) showed that respondents who had a low education had the risk of developing diphtheria by 1.67 times compared to respondents with high formal education. Subsequent reviews showed that the mother's poor knowledge had a risk of diphtheria of 0.088 times for diphtheria compared to good maternal knowledge⁽⁵⁾.

Widyastuti⁽¹⁶⁾ states that someone who has a higher level of education will be more oriented to preventive measures, know more about health problems and also have better health status. Economic levels also have an

influence on one's health. A person with low income will influence the level of his family's ability to meet family needs for nutrition, education and other needs⁽¹⁷⁾. Notoatmodjo⁽¹⁸⁾ states different things that income does not have a significant influence in influencing a person's health, but if someone earns quite a lot, then he is able to provide better facilities.

Personal Hygiene: The results showed that poor personal hygiene had a risk of 4.27 times greater for diphtheria⁽⁴⁾. Behavior factor is a very strong factor affecting people to be healthy or sick. Not infrequently behavior is formed due to lack of knowledge or possessing certain cultures or customs. There are people who know that exercise is important, overeating is not good but is not able to resist temptation, they are easily affected by hypertension or diabetes. There are also people or people because of their ignorance, they become sick (ignorance)⁽²⁰⁾.

Occupancy Density: The results of the review indicate that occupancy density that does not meet the requirements has a risk of 0.225 times for diphtheria compared to the density of occupancy that does not meet the requirements⁽⁵⁾. A study in West Java in 2015 also states that home density has an OR value of 22.7 which means that if most children live with a better home density, then the possibility of the child not getting diphtheria by 22.7 times⁽²¹⁾. Another study in Central Java also stated the same thing that the average density of house occupants could affect the number of diphtheria cases⁽²²⁾.

Conclusion

Factors that affect the case of diphtheria in East Java are based on the results of a review of the level of education, immunization status, physical condition of the home, population density, occupancy density, level of knowledge, and personal hygiene.

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