


Faktor Risiko Kejadian Difteri di Jawa Timur: Status Gizi Kurang dan Cakupan Imunisasi DPT-HB-HiB3 (Tahun 2019-2021)

Risk Factors for Diphtheria Incidence in East Java: Underweight Status, Coverage of DPT-HB-HiB3 (2019-2021 Period)

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ABSTRAK

Latar Belakang: Upaya untuk menanggulangi difteri salah satunya dengan memberikan imunisasi DPT-HB-HiB3 serta meningkatkan status gizi khususnya pada peningkatan berat badan balita. Provinsi Jawa Timur mengalami penurunan cakupan imunisasi DPT-HB-HiB3 pada tahun 2020 dan 2021 serta mengalami peningkatan jumlah status gizi kurang pada tahun 2020.

Tujuan: Tujuan dari penelitian ini untuk mendeskripsikan hubungan antara kejadian difteri dengan status gizi kurang serta cakupan imunisasi DPT-HB-HiB3 di 38 kabupaten/kota di Provinsi Jawa Timur Tahun 2019-2021.

Metode: Metode dalam penelitian ini menggunakan desain studi korelasi populasi untuk menganalisis data sekunder dari Buku Profil Kesehatan Provinsi Jawa Timur Tahun 2019-2021 yang diolah datanya menggunakan aplikasi Health Mapper dan SPSS.

Hasil: Pada tahun 2019, terdapat hubungan antara status gizi kurang dengan kejadian difteri (0,479) dan terdapat hubungan antara cakupan imunisasi DPT-HB-HiB3 dengan kejadian difteri (0,531). Pada tahun 2020, tidak terdapat hubungan antara status gizi kurang dengan kejadian difteri (0,065) dan tidak terdapat hubungan antara cakupan imunisasi DPT-HB-HiB3 dengan kejadian difteri (0,275). Pada tahun 2021, tidak terdapat hubungan antara status gizi kurang dengan kejadian difteri (0,050) dan tidak terdapat hubungan antara cakupan imunisasi DPT-HB-HiB3 dengan kejadian difteri (0,258).

Kesimpulan: Cakupan imunisasi DPT-HB-HiB3 dan jumlah status gizi kurang keduanya berhubungan dengan kejadian difteri pada tahun 2019, sedangkan cakupan imunisasi DPT-HB-HiB3 dan jumlah status gizi kurang keduanya tidak berhubungan dengan kejadian difteri pada tahun 2020 dan 2021.

Kata kunci: Difteri, Imunisasi DPT-HB-HiB3, Jawa Timur, Status Gizi Kurang

ABSTRACT

Background: One of the efforts to tackle diphtheria is by giving DPT-HB-HiB3 immunization and improving nutritional status, especially in increasing toddler weight. East Java Province has experienced a decrease in DPT-HB-HiB3 immunization coverage in 2020 and 2021 and has experienced an increase in the amount of underweight status in 2020.

Objectives: The purpose of this study is to describe the relationship between diphtheria incidence and underweight status and DPT-HB-HiB3 immunization coverage in 38 districts/cities in East Java Province in 2019-2021.

Methods: The method in this study used a population correlation study design to analyze secondary data from the 2019-2021 East Java Province Health Profile Book, which was processed using the Health Mapper and SPSS applications.

Results: In 2019, there was a relationship between underweight status and the incidence of diphtheria (0.479) and there was a relationship between DPT-HB-HiB3 immunization coverage and the incidence of diphtheria (0.531). In 2020, there is no relationship between underweight status and the incidence of diphtheria (0.065) and there is no relationship between DPT-HB-HiB3 immunization coverage and the incidence of diphtheria (0.275). In 2021, there is no relationship between underweight status and the incidence of diphtheria (0.050) and there is no relationship between DPT-HB-HiB3 immunization coverage and the incidence of diphtheria (0.258).

Conclusions: The coverage of DPT-HB-HiB3 immunization and the amount of underweight status were both associated with diphtheria incidence in 2019, while the coverage of DPT-HB-HiB3 immunization and the amount of underweight status were both not associated with the incidence of diphtheria in 2020 and 2021.

Keywords: *Diphtheria, DPT-HB-HiB3 immunization, East Java, Underweight status*

INTRODUCTION

Based on the epidemiological triangle, there are three factors that cause disease or health problems, namely the host, agent, and environment³. The epidemiology of the disease is divided into two: the epidemiology of infectious diseases and the epidemiology of non-communicable diseases. In this article, the writer wants to explain about diphtheria, which is one of the infectious diseases. Infectious diseases are infections that can be caused by viruses, bacteria, fungi, or parasites, and these diseases can be transmitted from person to person through direct contact or intermediaries (Irwan, 2017). One type of infectious disease is diphtheria. Diphtheria is due to *Corynebacterium diphtheriae* (*C. diphtheriae*) (Direktorat Sekolah Dasar, 2022). The bacteria that causes diphtheria are gram-positive bacteria and are facultative anaerobes (Safita *et al.*, 2020). Ages that are susceptible to diphtheria are children aged 1-10 years. Diphtheria is one of the most easily transmitted diseases; diphtheria is spread through saliva droplets or splashes and contaminated eating utensils (Hartoyo, 2018). According to data in the East Java Province Health Profile Book for 2019, 2020, and 2021, cases of diphtheria in East Java Province tend to decrease each year. Diphtheria is becoming a serious health problem, especially in SEAR (Southeast Asia Regional). According to a WHO report, diphtheria cases in Southeast Asia are highest at about 90%, and it is coming from our country at 91% (Radian, Suryawati and Jati, 2018). Immunization aims to increase the body's immunity to avoid various diseases and eliminate diseases, especially in infants (Artanti and Lestari, 2016). One of the preventions of diphtheria is to provide DPT-HB-HiB3 immunization. This immunization includes the type of basic immunization given to prevent 6 diseases, it known as Diphtheria, Pertussis, Tetanus, Hepatitis B, Pneumonia and Meningitis. Immunization has been proven to reduce the incidence of illness and death due to immunization-preventable diseases (PD3I) (Nursery and

Chrismilasari, 2019). Based on the data in the health profile book, underweight status is divided into three anthropometric indicators, that is Weight for Age (W/A) Height for Age (H/A) and Weight for Height (W/H) (Wulansari and Nadjib, 2019). In this article, data on undernutrition status is used, namely data on body weight by age (BB/U) or what can be called underweight status.

One of the efforts to control diphtheria is by providing DPT-HB-HiB3 immunization and improving nutritional status, especially in increasing body weight. East Java Province experienced a decrease in coverage of DPT-HB-HiB3 immunization in 2020 and 2021 and increased amount of underweight status in 2020 (Dinas Kesehatan Provinsi Jawa Timur, 2021). Based on the background description, these two factors are related to diphtheria. Therefore, the purpose of this study is to map the distribution of diphtheria incidence and describe the relationship between diphtheria and underweight status and the coverage of DPT-HB-HiB3 immunization in 38 districts/cities in East Java Province in 2019-2021.

METHOD

This study is a population correlation study conducted in 38 districts/cities in East Java Province as the unit of analysis. In this study, the variables used were the incidence of diphtheria as the dependent variable and underweight status and DPT-HB-HiB3 immunization as the independent variable. Secondary data were collected from the Health Profile Book of East Java Province in 2019, 2020, and 2021 consisting of 38 districts/cities, including information on the amount of underweight status, the coverage of DPT-HB-HiB3 immunization, and diphtheria incidence data.

Descriptive data analysis was carried out using the Health Mapper application, this application is an application recommended by WHO for mapping and concluding health problems in an area (Dinas Kesehatan Provinsi Jawa Timur, no date a).

In this case, the data is presented in the form of a regional distribution map, especially a map of East Java Province. The color map description shows the condition of underweight status and DPT-HB-HiB3 immunization coverage, while the dot shows the distribution of diphtheria incidence.

To identify the relationship between the incidence of diphtheria with underweight status and the coverage of DPT-HB-HiB3 immunization in East Java Province in 2019, 2020, and 2021, a correlation decision was made between variables through the Pearson Correlation Test. Decision making correlation between variables using the SPSS application.

RESULT AND DISCUSSION

Correlation of DPT-HB-HiB3 Immunization Coverage and Underweight Status with Diphtheria Incidence in 2019-2021

The following is data obtained from the East Java Provincial Health Profile Book in 2019, 2020 and 2021 including data on the incidence of diphtheria and the number of undernutrition status and DPT-HB-HiB3 immunization coverage.

Figure 1 shows that the incidence of diphtheria continues to decrease every year in East Java Province and the coverage of DPT-HB-HiB3 immunization decreases every year. While based on figure 2 the amount of underweight status increased in 2020 8.00% to 9.80% and decreased in 2021 9.80% to 7.53%.

The following are the interval categories of the strength of the correlation relationship, where 0

is no correlation, 0.00-0.25 is correlation-very weak, 0.25-0.50 is correlation-moderate, 0.50-0.75 is correlation-strong, 0.75-0.99 is correlation-very strong and 1 is correlation-perfect.

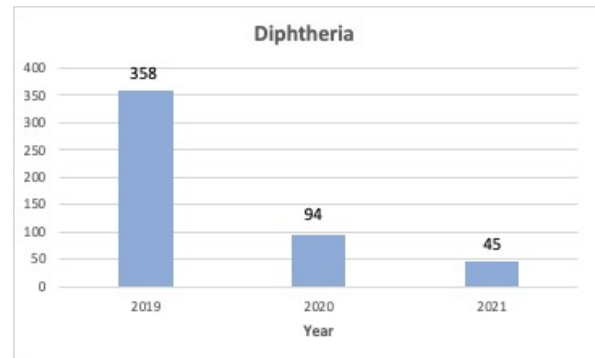


Figure 1. Diphtheria Incidence in East Java Province in 2019-2021

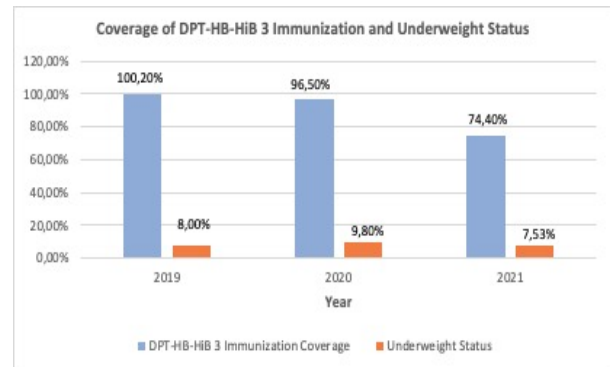


Figure 2. Amount of Underweight Status and DPT-HB-HiB3 Immunization for 2019-2021

Table 1. Pearson Population Correlation Test between Amount of Underweight Status and DPT-HB-HiB3 Immunization Coverage with Diphtheria Incidence in 2019-2021

Factors	Sig. (2-tailed)	Pearson Correlation
2019		
Underweight Status	0.002	0.479
DPT-HB-HiB3 Immunization	0.001	0.531
2020		
Underweight Status	0.696	0.065
DPT-HB-HiB3 Immunization	0.094	0.275
2021		
Underweight Status	0.767	0.050
DPT-HB-HiB3 Immunization	0.118	0.258

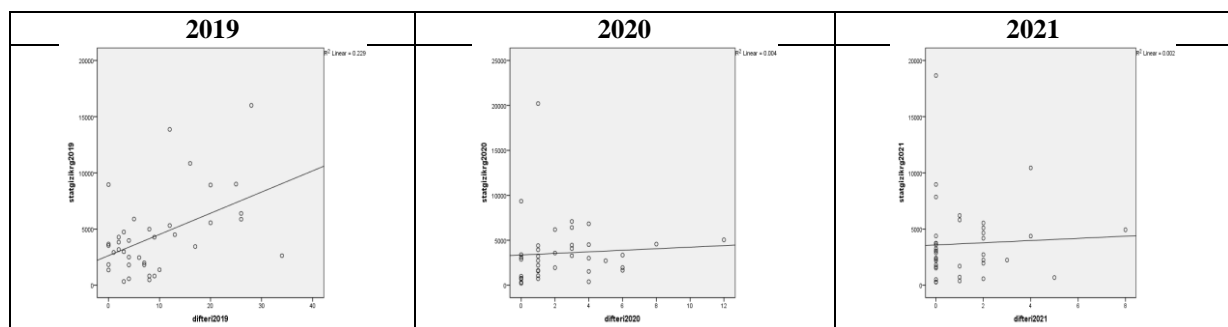


Figure 3. Correlation Graph of Amount of Underweight Status with Diphtheria Incidence in 2019-2021

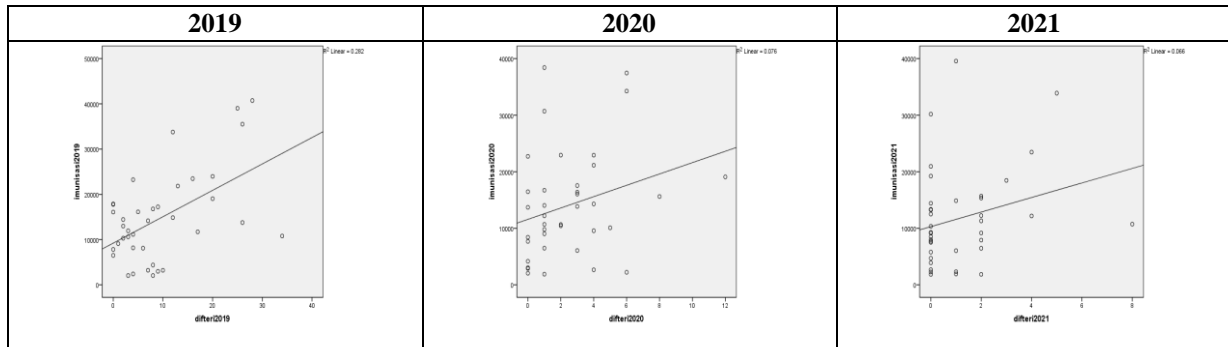


Figure 4. Correlation Graph of DPT-HB-HiB3 Immunization Coverage with Diphtheria Incidence in 2019-2021

Based on table 1, to see the relationship is from the sig value (2-tailed), while the value in parentheses is the correlation strength value. In 2019, correlation between underweight status and diphtheria incidence is correlation-moderate (0.479) and correlation between DPT-HB-HiB3 immunization coverage and diphtheria incidence is also correlation-strong (0.531). In 2020, correlation between underweight status and diphtheria incidence is uncorrelation (0.065) and correlation between DPT-HB-HiB3 immunization coverage and diphtheria incidence is uncorrelation (0.275). In 2021, correlation between underweight status and diphtheria incidence is uncorrelation (0.050) and correlation between DPT-HB-HiB3 immunization coverage and diphtheria incidence is uncorrelation (0.258).

Based on figure 3, it reveals the correlation graph amount of underweight status with diphtheria incidence in 2019-2021. While on figure 4, the figure shows the correlation graph of DPT-HB-HiB3 immunization coverage with diphtheria incidence in 2019-2021.

Distribution and Relationship between Underweight Status and Diphtheria Incidence in 2019-2021

In 2019, East Java Province faced 358 cases of diphtheria with an amount of underweight status of 167,515 or 8.0%. In 2019, the City of Surabaya had the highest amount of underweight status, which was 16,006 toddlers and the lowest was Blitar City, which was 325 toddlers. In 2019, Bangkalan Regency had the highest number of diphtheria cases in East Java Province, which was as many as 34 cases. In 2019, the lowest diphtheria cases were in 5 districts, namely Blitar Regency, Mojokerto Regency, Pacitan Regency, Probolinggo Regency, and Situbondo Regency, with 0 cases in each district.

The test results of the Pearson correlation test stated that the amount of underweight status with diphtheria cases in 2019 was the Sig value. (2-tailed) of 0.002, because the value of Sig. (2-tailed) < 0.05, it means that there is a relationship between the amount of underweight status and cases of diphtheria. In 2019, the Pearson correlation was obtained at 0.479, which means that the correlation

level is moderate and has a positive value.

In 2020 the incidence of diphtheria decreased, but the amount of underweight status increased from 8.0% to 9.80%. In 2020, 10 districts/cities in East Java Province had increased in the amount of underweight status and 28 districts/cities in East Java Province had decreased in the amount of underweight status. In 2020, Sidoarjo Regency had the highest diphtheria cases in East Java Province, which was 12 cases. In 2020, there were at least 9 cases of diphtheria in East Java Province, with 0 cases in each district/city.

The test results of the Pearson correlation test stated that the amount of underweight status with diphtheria cases in 2020 was the Sig value. (2-tailed) of 0.696, because the value of Sig. (2-tailed) > 0.05, it means that there is no relationship between the amount of underweight status and cases of diphtheria. In 2020, the Pearson correlation was obtained at 0.065, which means that there is no correlation, and it is positive.

In 2021 the incidence of diphtheria decreased, and the amount of underweight status also decreased from 9.80% to 7.53%. In 2021, 19 districts/cities in East Java Province experienced an increase in the amount of underweight status, 1 city in which the amount of underweight status was stable, namely Madiun City, and 18 districts/cities in East Java Province experienced a decrease in the amount of underweight status. In 2021, Lumajang Regency has the highest diphtheria cases in East Java Province, namely 8 cases. In 2021, the lowest diphtheria cases were in 20 districts/cities, with 0 case in each district/city.

The test results of the Pearson correlation test stated that the amount of underweight status with diphtheria cases in 2021 was the Sig value. (2-tailed) of 0.767, because the value of Sig. (2-tailed) > 0.05, it means that there is no relationship between the amount of underweight status and diphtheria incidence. In 2021, the Pearson correlation was obtained at 0.050, which means that there is no correlation and it is positive.

One of the factors that influence the incidence of diphtheria is the nutritional status of children (Arifin and Prasasti, 2017). Based on research, it has been proven that underweight status

in children has a 1.78 times greater risk of developing diphtheria disease compared to good nutritional status in children (Lestari, 2012).. A decrease in appetite in children will affect their weight condition; if their weight continues to decrease, it can lead to a condition of decreased nutritional status in children (Carolin, Saputri and Silawati, 2020).. Thus, based on this case, the role of parents and health professionals is vital to reduce the underweight status of children and the incidence of diphtheria. Providing adequate nutritional intake is important for growth, development, and increased metabolism in children (Sundoko, Rasni and Hardiani, 2015)..

Distribution and Relationship between DPT-HB-HiB3 Immunization Coverage and Diphtheria Incidence in 2019-2021

In 2019, 358 cases of diphtheria occurred in East Java Province with DPT-HB-HiB3 immunization coverage of 100.20%. The area with the highest immunization coverage (114.1%) was Bondowoso Regency with 2 cases of diphtheria. There are 5 districts that are free from diphtheria cases, namely Probolinggo Regency with 104.1% immunization coverage, Mojokerto Regency with 105.2% immunization coverage, Blitar Regency with 97.8% immunization coverage, Situbondo Regency with 87.7% immunization coverage, and Pacitan Regency with 99.8% immunization coverage. Meanwhile, Bangkalan Regency has the lowest DPT-HB-HiB3 immunization coverage as many as 34 cases with 73.9% immunization coverage.

The test results of the Pearson correlation test stated that DPT-HB-HiB3 immunization coverage with diphtheria cases in 2019 was the Sig value. (2-tailed) of 0.001, because the value of Sig. (2-tailed) < 0.05, it means that there is a relationship between DPT-HB-HiB3 immunization coverage and diphtheria cases. In 2019, the Pearson correlation was obtained at 0.531, which means that the correlation level is strong and positive, meaning that the relationship between the two variables is in the same direction, namely the higher DPT-HB-HiB3 immunization coverage, the healthier the baby's condition.

In 2020, 94 cases of diphtheria occurred in East Java Province, with 96.50% DPT-HB-HiB3 immunization coverage. The area with the highest immunization coverage (108.8%), was Bondowoso Regency, with 1 case of diphtheria. Meanwhile, Bangkalan Regency has the lowest DPT-HB-HiB3 immunization coverage of 5 cases with 69.1% immunization coverage. The highest diphtheria cases were in Sidoarjo Regency, with 12 cases with 98.1% immunization coverage.

The test results of the Pearson correlation test stated that DPT-HB-HiB3 immunization coverage with diphtheria cases in 2020 was the Sig

value. (2-tailed) of 0.094, because the value of Sig. (2-tailed) > 0.05, it means that there is no relationship between DPT-HB-HiB3 immunization coverage and diphtheria cases. In 2020, the Pearson correlation was obtained at 0.275, which means that there is no correlation and has a positive value.

In 2021, 45 cases of diphtheria occurred in East Java Province with 74.40% DPT-HB-HiB3 immunization coverage. The area with the highest immunization coverage (141.1%) was Ngawi Regency with 2 cases of diphtheria. Meanwhile, Jember Regency has the lowest DPT-HB-HiB3 immunization coverage of 0 cases with 29.8% immunization coverage. The highest diphtheria cases were in Lumajang Regency, with 8 cases with 78.8% immunization coverage.

The test results of the Pearson correlation test stated that DPT-HB-HiB3 immunization coverage with diphtheria cases in 2021 was the Sig value. (2-tailed) of 0.118, because the value of Sig. (2-tailed) > 0.05, it means that there is no relationship between DPT-HB-HiB3 immunization coverage and diphtheria cases. In 2021 the Pearson correlation was obtained at 0.258, which means that there is no correlation and has a positive value.

One way to prevent the occurrence of diphtheria is to give immunizations to children. One type of immunization to prevent diphtheria is the DPT-HB-HiB3 immunization, this immunization is given in 3 doses with a distance of 1 month. Based on research, immunization status is associated with the incidence of diphtheria, especially in patients with non-immunized status and incomplete immunization (Harsanti, Setiabudi and Wijaya, 2020).. The role of parents and health professionals is very important in providing DPT-HB-HiB3 immunization to children to prevent the occurrence of diphtheria. Based on research, it is proven that a positive mother's attitude has a 50% risk of her child getting DPT-HB-HiB3 immunization, because attitude is the beginning of behavior that influences mothers to give DPT-HB-HiB3 immunization to their children (Izza, Lestari and Tumaji, 2017).. The provision of DPT-HB-HiB3 immunization and other information regarding immunization is very easy for the public to obtain through Integrated Healthcare Center services (Puspariny, 2019)..

CONCLUSION

The study concluded that there is a significant relationship between the coverage of DPT-HB-HiB3 immunization and the amount of underweight status with diphtheria incidence in East Java Province in 2019 period. Meanwhile, in 2020 and 2021, there is no significant relationship between the coverage of DPT-HB-HiB3 immunization and the amount of underweight status with diphtheria incidence. It is necessary to educate the whole community of health professionals

regarding the importance of DPT-HB-HiB3 immunization and about nutritional status, especially regarding body weight in toddlers to prevent the incidence of diphtheria.

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