# The Distribution of Measles and Rubella in Health Office of East Java Province

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# The Distribution of Measles and Rubella in Health Office of East Java Province

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## ABSTRACT

Measles is a highly contagious disease caused by viruses that can be prevented by immunization and can be transmitted through coughing and sneezing. Measles is one of the five most common childhood diseases in the world. The purpose of this analysis is to describe the characteristics of measles cases in the East Java Provincial Health Office in 2018. This study was a descriptive study using a case report design, data obtained from measles case reports from 38 districts in East Java in January-December 2018. The sample in this study was all data on cases of measles suspicion reported in form C1. The data analysis test that will be used was using a descriptive test and chi-square test. Based on descriptive analysis test, it was found that measles cases were mostly in women (57.4%) and <15 years old (80.6%). The chi-square test results showed a significant relationship between immunization and the incidence of measles in East Java Province in 2018 with p-value 0.000, OR= 360.500; 95% CI = 56.700-2292.057 (there was a correlation between immunization status and the incidence of measles).

**Keywords:** characteristics; immunization; measles

## INTRODUCTION

### Background

Measles and rubella are infectious diseases transmitted through the respiratory tract caused by measles and rubella viruses. Measles and rubella are very contagious diseases, children and adults who have never been immunized against measles and rubella or who have never experienced measles and rubella have a high risk of contracting this disease. Measles is one of the five most common childhood diseases in the world. The incubation period of measles is between 7-18 days. Symptoms of measles are fever ≥38°C for 3-5 days, reddish rickshaws on the skin (rash) accompanied by coughing or colds and conjunctivitis but are very dangerous if accompanied by complications of pneumonia, diarrhea, meningitis and even cause death. Rubella is a mild disease in children, however[(1)].

Mentioning that 1% of deaths in children under the age of five are caused by measles in 2010. According to WHO, if 1 case of measles is found in an area or population, then there are 17 to 20 cases in the field in the high vulnerable population[(2)]. The Global Vaccine Action Plan (GVAP) targets measles cases to be eliminated in 5 WHO regions by 2020. Indonesia has committed to achieving measles elimination in 2020. According Kemenkes (2017) One of the strategies is to achieve individual measles based surveillance/Case Based Measles Surveillance (CBMS) and measles outbreaks are fully investigated. The elimination stage is the stage where there is no measles endemic area for ≥ 12 months in an area (District/City) as evidenced by quality measles surveillance[(3)]. An indicator of the success of measles surveillance is finding or reporting cases of measles ≥2/100,000 population[(3)].

According Ministry of Health (2012) that one strategy that has been implemented by the government to implement the measles surveillance program is Case Based Measles Surveillance in all public health center and hospitals using the C1 format. However, the implementation of the measles surveillance program is Case Based

Measles Surveillance in all public health center and hospitals has not been optimally implemented, reported cases of measles are still very low as are the number of cases examined by specimens[4].

## METHODS

The research conducted was a descriptive study with a case report method. Data were obtained from the monthly report on measles surveillance sent using form C1, data collection began from January to December 2018. The population in this study was all data suspected of cases reported using form C1 by measles surveillance officers in 38 District / City Health Offices in East Java Province. The sample in this study was all cases of measles suspect data in the form of C1. The sampling technique in the study was total sampling. Data that has been collected was then carried out descriptive statistical analysis using descriptive tests to describe the characteristics of the case and the chi-square test was used to determine the relationship between immunization status and the incidence of measles cases.

## RESULTS

### Measles Case Characteristics

Based on the results of the report on the implementation of measles surveillance at the East Java Provincial Health Office in 2018 by using form C1, the frequency distribution analysis test was carried out as follows:

Table 1. Distribution of measles cases characteristics in The East Java Provincial Health Office in 2018

| Characteristics | Frequency | Percentage |
|---|---|---|
| Sex | | |
| Male | 55 | 42.6 |
| Female | 74 | 57.4 |
| Total | 129 | 100.0 |
| Age | | |
| < 15 years | 104 | 80.6 |
| 15-25 years | 18 | 14.0 |
| 26-36 years | 3 | 2.3 |
| >36 years | 4 | 3.1 |
| Total | 129 | 100.0 |
| Immunization status | | |
| Immunized | 105 | 81.4 |
| Not immunized | 24 | 18.6 |
| Total | 129 | 100.0 |
| Laboratory results | | |
| Positive | 106 | 82.2 |
| Negative | 23 | 17.8 |
| Total | 129 | 100.0 |

Based on Table 1, from the results of the analysis of cases of suspected measles reported as many as 129 cases it was found that at most cases were reported to occur in women as many as 74 cases (57.4%) than men as many as 55 cases (42.6%), while based on age which was classified into 4 categories found that the highest age was <15 years of age of 104 people (80.6%). When viewed in terms of immunization status, it was found that out of 129 reported cases, there were more reported cases of immunization, 105 cases (81.4%) than 24 cases (18.6%) who were not immunized, after confirmation Laboratory of data reported which has more negative laboratory results as many as 106 people (82.2%) than negative laboratory results as many as 23 cases (17.8%).

### The Correlation of Immunization Status and Measles Events

Statistical analysis using the chi square test was used to determine the correlation of cases that received immunization and cases that did not get immunizations, the following results of the test of relationship analysis are as follows:

Table 2. Correlation between measles immunization status and incidence of measles in the East Java Provincial Health Office in 2018

| Immunization status | Laboratory results of measles | | | | Total | | p-value |
|---|---|---|---|---|---|---|---|
| | Negative | | Positive | | | | |
| Immunized | 103 | 79.8 | 2 | 1.6 | 105 | 81.4 | 0.000 |
| Not immunized | 3 | 2.3 | 21 | 16 | 24 | 18.6 | |
| Total | 106 | 82.2 | 23 | 17.8 | 129 | 100.0 | |

Based on descriptive analysis, it was found that cases that received more immunizations did not experience measles (negative) as many as 103 cases (79.8%) compared to those who experienced measles cases. Whereas cases that were not immunized were more likely to have measles 23 cases (17.8%) compared to those who did not experience measles. The results of the analysis using the Chi-square test between measles immunization status and the incidence of measles cases in the East Java Provincial Health Office in 2018 showed the results of p-value 0.000 ($p < 0.05$) with OR. 360.500; 95% CI = 56.700-2292.057.

## DISCUSSION

### Characteristics of Measles Cases

Measles is one of the diseases that is easily transmitted and can be prevented by giving immunization. One indicator of the success of measles surveillance is that each district must report cases of measles rather than measles ≥2/100,000 population. In Table 1 shows that based on the reported cases 129 cases had the most negative laboratory results as many as 106 cases (82.2%). Based on the results of the analysis, it was reported that the reported cases of measles were mostly female. The results of this analysis are in line with the research conducted by Nurlaila & Hanna (2016) showing that 60% of people with measles are more common in women[5].

### The Correlation of Immunization Status and Measles Events

Ministry of Health (2012) said that he implementation of the measles immunization campaign is one of the strategies carried out to reduce cases and break the chain of transmission of measles (Herd immunity 95%). Based on the results of the descriptive analysis, it was found that out of 23 positive cases of measles, 21 cases (91.3%) were found who did not receive immunization. This is supported by the Vika study (2019) which shows that the incidence of measles tends to increase with poor immunization coverage[6]. Whereas based on the results of the chi-square analysis it was found that p-value 0.000 ($p < 0.05$) with an OR of 360.5 means that children or toddlers who did not get measles immunization would be 360.5 times more likely to develop measles than children or toddlers who get immunization. The results of this analysis are in line with the research produced by Giarsawan et.al (2014) that immunization status of incomplete children will be 16 times more likely to develop measles than children who get immunizations[7].

## CONCLUSION

Based on the case reports of measles suspicion in the East Java Provincial Health Office in 2018 out of 129 cases 21 cases were found (17.8%) with positive results and no immunization. Most cases occur in female sex with age <15 years. There was a relationship between giving immunization to cases of measles.

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