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The Development of ARI Cases in Work Area X Located in the PT.BKA Motui Area, Kolaka Regency 2019-2021

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ABSTRACT

Introduction: Acute Respiratory Infection (ARI) is a respiratory infection that can last for 14 days. Motui Village is one of the villages that has become a mining area. Based on field data, one of the impacts caused by mining activities is an increase in dust blown by the wind into densely populated villages which can cause ARI. This study aims to see the development of ARI cases in residential areas near mining areas.

Method: The design of this research is secondary data analysis by looking at data from the Health Center in Motui village which is a mining area. Looking at the development of ARI cases in 2019, 2020, and 2021. The purpose of this research is to see the development of ARI cases in mining areas

Result: ARI is in the top 10 diseases in North Konawe Regency. In 2019 incidence of ARI was 111, in 2020 incidence of ARI was 81, and in 2021 incidence of ARI was 120. In the last 3 years, of 10 villages, Motui village was the village with the highest incidence of ARI.

Conclusion: The incidence of ARI fluctuate every year for the last 3 years. The number of ARI occurrences in mining areas is higher than in non-mining areas.

Introduction

Indonesia is a country rich in natural resources. The amount of investment capital for mining companies is expected to have a positive impact on the economy of the local community. However, mining activities will have the potential to cause negative impacts on the community and the surrounding environment.[1] Mining causes environmental damage due to extensive land

clearing, digging deep holes and moving large amounts of soil. In addition, coal mining activities can cause the surrounding community to be exposed to health problems in the form of respiratory problems due to dust. Air pollution is increasingly showing a very alarming condition.[2] Sources of air pollution can come from various activities, including mining, industry, transportation, offices, and housing. These various activities are the biggest contributors to air pollutants that are released into the free air.[3]

The impact of air pollution causes a decrease in air quality, which has a negative impact on human health.[4] One of the areas that carry out nickel mining in Indonesia is Motui village in North Konawe district, Southeast Sulawesi. Based on preliminary research, data was obtained that ARI is the case with the most incidence of disease (reports of the ten most diseases) in Motui village. It is feared that the ARI incident was related to air pollution caused by dust from PT.BKA's mining activities in Motui village.

Method

This type of research is analytic observational with a correlation study design.[5] The population used is the entire population living in the village of Motui. The research sample was all residents affected by ARI reported at the Motui Health Center in 2019, 2020, 2021. Sampling was carried out by non-probability sampling, because observations were made on monthly recapitulation documents of ARI sufferers from January-December.The research instrument used in this research is documentation or secondary data from monthly reports. The data collected includes data on patients or cases of ARI and data on the distance between settlements and transportation routes. The independent variable in this study was the mining area of Motui village, North Konawe district. The dependent variable in this study was the incidence of ARI among residents in Motui village, North Konawe district

Result

Based on the data on the number of ARI occurrences recapitulated from the results of monthly reports in North Konawe Regency, 132 cases for the last 3 years. In 2019 there were 111 cases, in 2020 there were 81 cases, and in 2021 there were 120 cases. In 2020 it will decrease and increase 2021. ARI is still the top 10 diseases in Motui village which is a mining area. Based on data from monthly reports of ARI disease in North Konawe Regency, the highest cases of ARI were found in Motui village, which is a mining area.

The results in Motui village show that between the area which is a mining area and other areas, it shows that Motui as a mining area has the highest cases of ARI.

Table 1. Number of ARI cases in North Konawe Regency (2019, 2020, 2021)

Village Name	2019	2020	2021
Pekaroa	12	10	3
Motui	34	19	20
Ranompubulu	15	12	12
Lambuluo	6	7	16
Puwonggia	21	12	16
Pudonggala Utama	12	8	14
Matanggonawe	0	0	8
Kokapi	0	2	10
Wawoluri	1	0	4
Wanggudu	9	10	7
Total	111	81	120

Discussion

An acute infectious disease that attacks one part and or more of the respiratory tract from the nose (upper tract) to the alveoli (lower tract) including adnexal tissues such as sinuses, middle ear cavity, and pleura.[6] ARI is a disease that often occurs in children because the child's immune system is still low. The term ARI includes three elements, namely infection, respiratory tract, and acute, where the meaning is Infection, which is the entry of germs or microorganisms into the human body and multiplies, causing symptoms of the disease. And also ARI is the respiratory tract, which is an organ from the nose to the alveoli and their organs adnexa such as the sinuses, middle ear cavity, and pleura.[8]

Acute infection is an infection that lasts up to 14 days. A limit of 14 days is taken to indicate an acute process although for some diseases that can be classified in ARI this process can last more than 14 days..[9]

According to UNEP, mucus secretion or cold symptoms also occur in the common cold caused by infection with the rhinovirus and/or coronavirus group of viruses. This disease can be accompanied by fever in children for several hours to three days.[10] Meanwhile, air pollution is suspected to be a trigger for viral infections in the upper respiratory tract. ARI can be transmitted through saliva, blood, sneezing, respiratory air containing germs that are inhaled by healthy people into their respiratory tract, supported by poor air quality and dense housing density (< 8 m2/person).[11]

Based on research conducted by Gertrudis (2010) regarding the relationship between the incidence of ARI around the cement factory which takes the variable distance from the house to the cement factory and the variable distance from the house to the road.[12] The distance between a house and a cement factory is close (≤1000 meters) and far (1000 meters) the distance from a house to the road is close (≤100 meters) and far (100 meters).[13]

In large doses, all dust is stimulant and can cause a reaction even if it is mild. the reaction is in the form of excessive mucus production, if it continues, mucus gland hyperplasia can occur..[14] The results of the research conducted in Motui village showed that in areas exposed to respiratory tract disorders were higher than in areas not exposed. This is in line with other research, which states that there is a significant relationship between high dust concentrations and the occurrence of lung function abnormalities.[15] Dust that enters the inspiratory tract causes a non-specific defense mechanism reaction in the form of coughing, sneezing, impaired mucociliary transport, and impaired phagocytosis of macrophages. The mucociliary system is also impaired and causes increased mucus production and stimulated smooth muscles around the airways, causing constriction. In the same exposure period, abnormalities that arise in different respondents, the impact can also be different.[16]

Conclusion

ARI is in the top 10 diseases in North Konawe Regency and it was fluctuating every year for the last 3 years. The number of ARI occurrences in mining areas is higher than in non-mining areas.

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