Ecological Analysis of Preeclampsia/Eclampsia Case in Sidoarjo Regency, Indonesia, 2015-2019

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Abstract

Preeclampsia is hypertension that arises after 20 weeks of pregnancy accompanied by proteinuria, the symptoms are divided into mild and severe preeclampsia. Preeclampsia with a coma is called eclampsia. Globally 80% of maternal deaths are classified as direct death. Hypertension is directly responsible for approximately 20% of maternal deaths in the United States. Supas in 2015 showed maternal mortality rate in Indonesia 305/100,000 live births and the highest in Southeast Asian countries which only 40-60/100,000 live births. One of the main causes is preeclampsia/eclampsia. In Sidoarjo Regency in the last 5 years, the most common cause of maternal death was preeclampsia/eclampsia by 58%. The purpose of this study was to determine the description of the incidence of preeclampsia/eclampsia in the last 5 years in the Sidoarjo Regency. This research is a descriptive study with a quantitative approach using secondary data from the Sidoarjo District Health Profile in 2015-2019. The results found that the highest incidence of preeclampsia/eclampsia in the Sidoarjo Regency was Temple Health Center and Taman Health Center (5.74%), and Buduran Health Center (4.10%). The trend in the incidence of preeclampsia/eclampsia in the Sidoarjo Regency over the past 5 years has fluctuated and has not shown a better change. It could be concluded that there are 3 Health Centers that have the highest percentage of preeclampsia/eclampsia due to lack of knowledge about maternal health. This shows that the program carried out by the Government to reduce the incidence of preeclampsia/eclampsia in the Sidoarjo Regency has not been effective so further intervention is needed.

Keywords*: preeclampsia, maternal health, ecological analysis.*

Introduction

Preeclampsia/eclampsia is a collection of symptoms that occur in pregnant women, childbirth, and the puerperium consisting of the tree: hypertension, proteinuria, and edema, which usually occurs at more than 20 weeks' gestation, sometimes accompanied by convulsions to coma. Although pregnant women do not show signs of vascular or hypertension before [1]. Eclampsia is divided into three, namely antepartum eclampsia, intrapartum eclampsia, postpartum eclampsia and may occur in the last trimester and increase as labor approaches [2].

Risk factors for preeclampsia and eclampsia include primigravida, primiparity, age, history of preeclampsia or eclampsia, kidney disease, and pre-existing hypertension before pregnancy, multiple pregnancies, and obesity [3–5]. However, from these risk factors, it is still difficult to determine the most dominant factor [5].

Hypertension in pregnancy makes up 5-15% of pregnancy complications and is one of the three highest causes of morbidity and mortality besides bleeding and infection. Globally 80% of maternal deaths are classified

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as direct maternal mortality. Hypertension is directly responsible for approximately 20% of maternal deaths in the United States, some cases of eclampsia occur within 24 hours after delivery but about 3% of cases are diagnosed between 2-10 days postpartum.

According to the World Health Organization in 2008, that every year more than 500,000 maternal women were dying, one of the causes of maternal and fetal morbidity and mortality was preeclampsia, the incidence rate was between 0.51%-38.4%. In developed countries, the incidence of preeclampsia ranges from 6-7%, and eclampsia 0.1-0.7%. While the maternal mortality rate due to preeclampsia and eclampsia in developing countries is still high. Preeclampsia, one of the syndromes found in pregnant women over 20 weeks, consists of eclampsia and proteinuria with or without edema [6].

A study found that there is a relationship between age and the incidence of pre-eclampsia, there is a relationship between knowledge and the incidence of pre-eclampsia. This finding is strengthened by other research which states that there is a relationship between knowledge of the incidence of preeclampsia/eclampsia [7]. Based on the background description, the study aimed to find out the description of the incidence of preeclampsia/ eclampsia during the last 5 years in Sidoarjo Regency [8].

Methods

This research was a descriptive study with a non-reactive quantitative approach. The study used ecological analysis was conducted by utilizing secondary data on the Health Profile of Sidoarjo Regency from 2015 to 2019 [9]. The ecological analysis is one way for researchers to see the large-scale impact of a specific policy or intervention on the health of the population in an area [10]. Descriptive analysis was conducted in the form of narratives by utilizing previously published literature.

Findings

The trend of the number of live births in the Sidoarjo Regency in the last five years (2015-2019) is presented in the form of a bar diagram which can be seen in Figure 1. Live births in Sidoarjo Regency if in the past 5 years amounted to 179,609 people. Health Centers that had the highest live births were Waru Health Center (7.54%), Taman Health Center (6.79%) and Candi Health Center (6.75%), while those who had the lowest live births were Porong Health Center (1.4%), Kepadangan Health Center (1.66%) and Sekardangan Health Center (1.87%)[11–15].

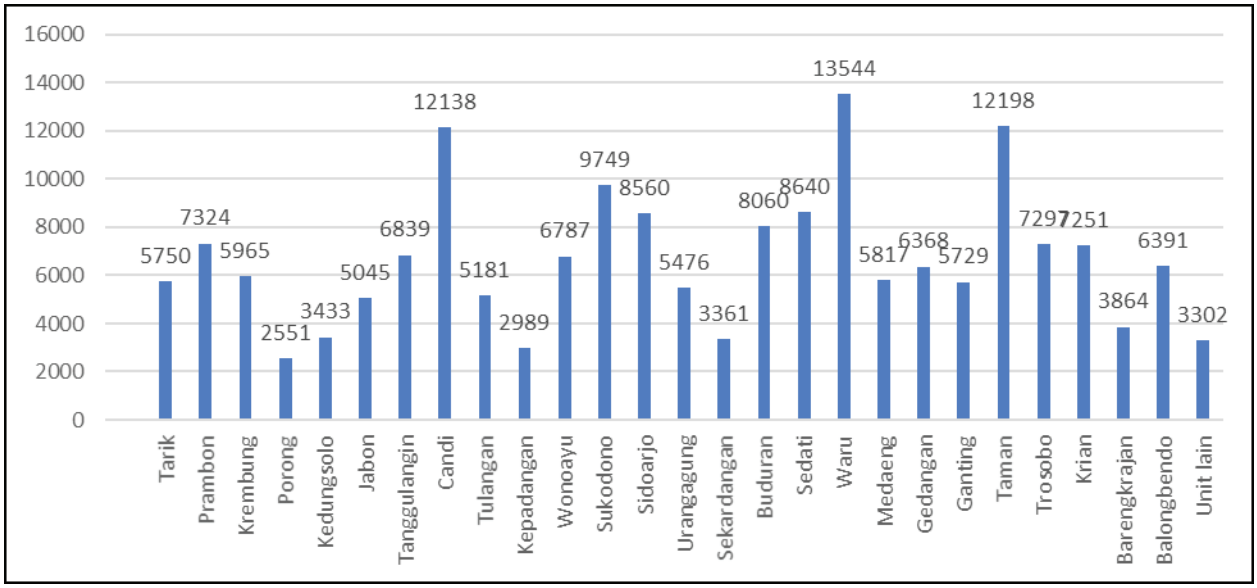

Figure 1. The trend of Live Birth in the Last 5 Years in Sidoarjo Regency in 2015-2019

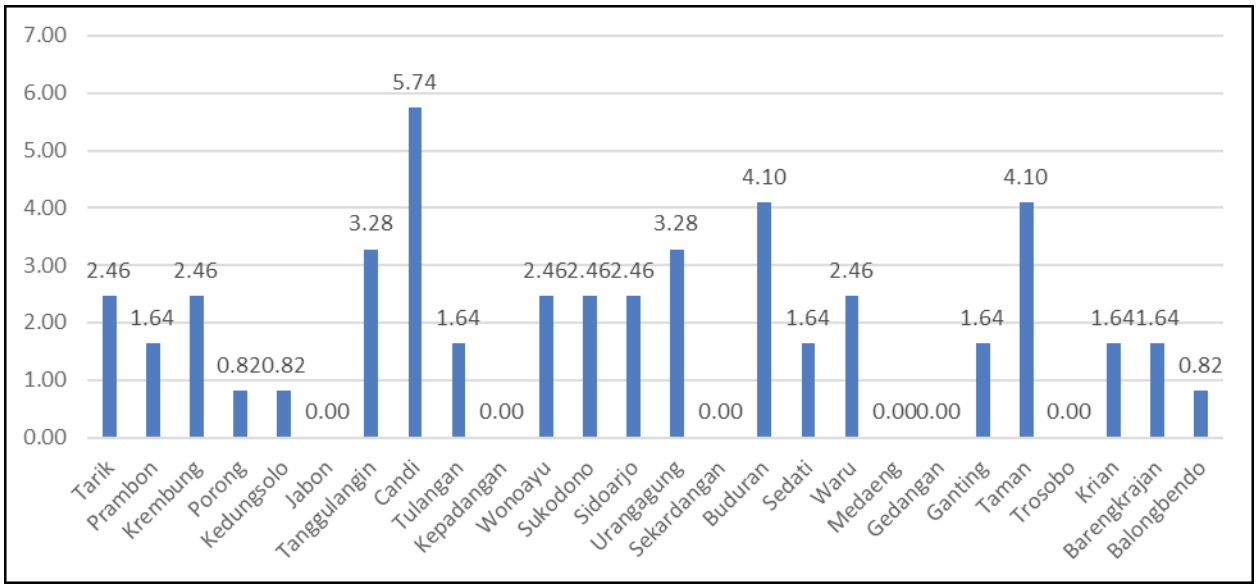

Figure 2. Preeclampsia/Eclampsia Occurrence in Sidoarjo Regency in 2015-2019

The incidence of pre-eclampsia/eclampsia in the Sidoarjo Regency in the last five years (2015-2019) is presented in the form of a bar chart and can be seen in Figure 2. The incidence of preeclampsia/eclampsia has been added up over the past 5 years at 47.54%. Health Centers that have the highest cases are Candi Health Center (5.74%), Taman Health Center and Buduran Health Center (4.10%), Urangagung Health Center and Tanggulangin Health Center (3.28%), while Health Centers which have the lowest cases were Balongbendo Health Center, Porong Health Center, Kedungsolo Health Center (0.81%), Prambon Health Center, Sedati Health Center, Tulangan Health Center, Ganting Health Center, Krian Health Center, Barengkrajan Health Center (1.64%) and Prambon Health Center, Krembung Health Center, Wonoayu Health Center, Sukodono Health Center, Sidoarjo Health Center (2.46%)[11–15].

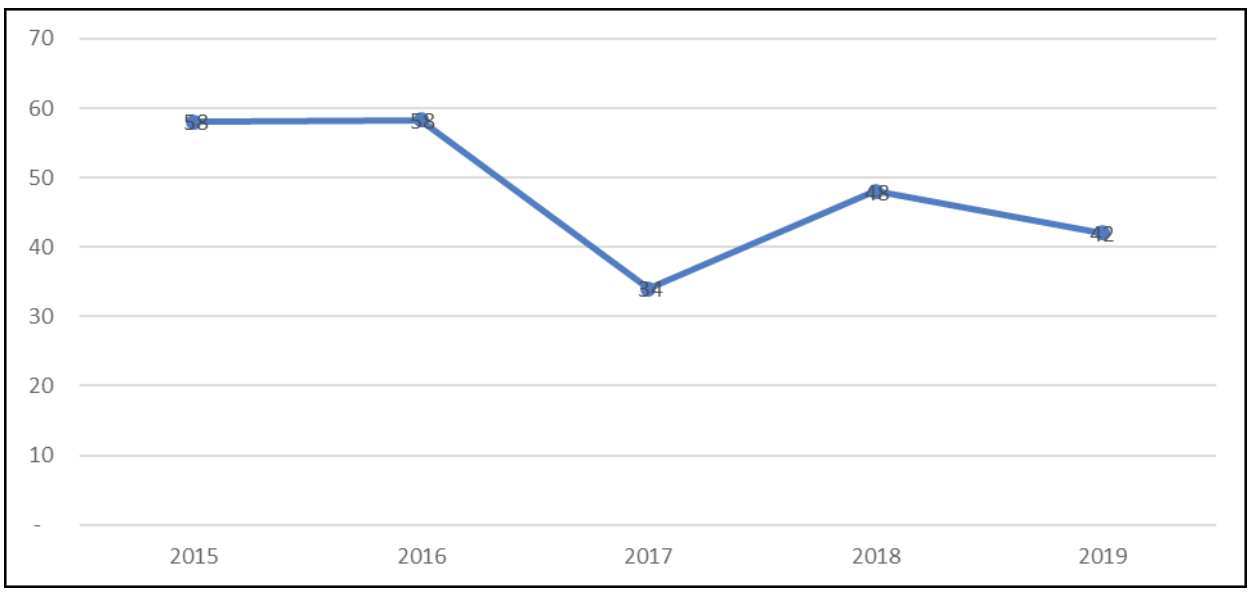

Figure 3. Trends in Pre-Eclampsia/Eclampsia Cases in Sidoarjo Regency in 2015-2019

The results of this study illustrate that the incidence of preeclampsia/eclampsia in the Sidoarjo Regency in the last five years is almost evenly distributed in all regions of the Sidoarjo Regency. The impact that can affect the mother and baby where during preeclampsia in pregnant women is reduced blood flow to the placenta that can cause impaired fetal growth, premature birth until the death of the fetus and the placenta can be released prematurely. In more extreme conditions, the occurrence of eclampsia can cause bodily damage to maternal death. Based on these reasons, a breakthrough is needed in its management in overcoming problems related to obstetric issues as stipulated in the Decree of the Minister of Health of the Republic of Indonesia Number 369/MENKES/SK/III/2007 concerning Midwifery Service Standards following Standard 3, namely midwives providing high-quality antenatal care to optimize health during pregnancy which includes early detection, treatment or referral of certain complications [16].

Early recognition of the diagnosis and perfect handling needs to be done to avoid eclampsia because the diagnosis of preeclampsia with chronic hypertension is not uncommon to cause difficulties. In chronic hypertension, elevated blood pressure before pregnancy in a young pregnancy, or at 6 months postpartum, will be useful for making a diagnosis. Increased blood pressure can be prevented by resting and eating a diet. Rest can be done by reducing daily work, and it is recommended to sit and lie more, a diet high in protein and low in fat, carbohydrates, salt, and unnecessary excessive weight gain should be recommended [17].

Primigravida women are also more at risk of dying from preeclampsia/eclampsia compared to multigravida mothers. The results of this study are also consistent with previous research which states that women who experience first pregnancy have a risk of severe preeclampsia 2.2 times compared to a pregnant woman who is more than 1 time [18]. Preeclampsia is considered a disease in the first pregnancy long ago. The incidence of preeclampsia in primigravida and nullipara is higher than multigravida/multipara. Generally, pregnancy with preeclampsia occurs in primigravida because immunologically the formation of blocking antibodies against placental antigens in the first pregnancy is incomplete, resulting in an unfavorable immune response to histoincompability of the placenta [19].

Based on the data contained in the Sidoarjo District Health Profile report, the author shows the trend of preeclampsia/eclampsia in Sidoarjo regency from 2015 to 2019 as presented in Figure 3. Figure 3 shows the trend of preeclampsia/eclampsia occurrence fluctuating and decreasing significant in 2016 (58%) to (34%) in 2017, then increased in 2018 (48%), then decreased again in 2019 (42%)[11–15].

The data display showing the trend of fluctuating preeclampsia/eclampsia gives a picture of the impact on increasing morbidity and mortality in mothers and infants in the Sidoarjo Regency. This situation shows that the existing programs so far have not been effective. The obstacles found in the field to reduce the incidence of preeclampsia/eclampsia are the knowledge and behavior of the community itself that is less supportive. For example, the description of the 4th antenatal care visit that is only 97.8% of the target set 100%. Antenatal care plays an important role in preventing and detecting obstetric complications, antenatal care services are one of the maternal and child health service programs [15,20].

The results of this study are in line with the results of previous studies which inform that there is a relationship between the mother's knowledge and the incidence of preeclampsia [21]. Knowledge is the result of knowing and occurring after people have sensed a certain object. The level of knowledge is influenced by several factors such as education, age, information, social culture, environment, and experience [22,23]. The more dominant factor of the results of this study is information where the more information obtained, the higher the level of knowledge about preeclampsia [21].

Policies on maternal health in the last five years need to be reviewed, community support for maternal and child health service programs needs to be encouraged again, especially for antenatal care [20,24]. The government needs to promote counseling about pregnancy and childbirth with complications, especially for pregnant women who are at risk. Especially in primigravida mothers, have a history of hypertension and have hereditary preeclampsia/eclampsia, and pregnancy checks at least 4 times during pregnancy by health professionals for early detection of pregnancy complications [22,25,26]. Midwives as health workers who play a role in services are expected to be able to carry out optimal supervision if finding pregnant women with age and gravida who are at risk, especially at vulnerable times [27,28].

The Health Office is expected to be more selective in monitoring the completeness of the recording and

reporting system in each health service, such as the Health Center and its network, and Private Practice Midwives, so it is necessary to conduct an audit with the Head of Health Center, Doctors and Midwives in all Health Centers in the work area that aims as learning so that cases of death do not recur and increase the competency standard of health workers by conducting training and a Memorandum of Understanding with the medical services in the Hospital [29,30]. Advocacy is needed in the field of budgeting for training for health workers, especially midwives, as the spearhead of maternal and child health services at the Health Center. Training and refreshing are needed, especially for competencies in obstetric emergencies.

Conclusions

The incidence of preeclampsia/eclampsia in the Sidoarjo Regency in the last five years was 48%. Health Centers with above-average preeclampsia/eclampsia were 11 Health Centers including Tarik Health Center, Krembung Health Center, Wonoayu Health Center, Sukodono Health Center, Sidoarjo Health Center, Waru Health Center (2.46%), Tanggulangin Health Center, Urangagung Health Center (3.28%), Buduran Health Center, Taman Health Center (4.10%) and Candi Health Center (5.74%). Based on the Sidoarjo District Health Profile Report states that the prevalence of preeclampsia/eclampsia which was evenly distributed and quite high was caused by people's behavior that is less supportive of antenatal care services.

Trends in the incidence of preeclampsia/eclampsia in the Sidoarjo Regency in the past five years have fluctuated and have not shown any changes for the better. There was an increase in 2018 where the percentage of the incidence of preeclampsia/eclampsia was 34% to 48% in 2018.

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