



Effect of Maternal and Exposure to Cigarette Smoke Factors on the Incidence of Fetal Death in the Womb in Langkat Regency in 2019

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Abstract - *The purpose of this research is to find out and analyze effect of maternal and exposure to cigarette smoke factors on the incidence of fetal death in the womb in Langkat Regency in 2019. This type of research is an analytical observation research, with a case control design. Researchers took a total of 31 respondents in the case group sample, taken based on data recorded from the Public Health Center and the Langkat Regency Health Office with a comparison of the number of control group samples as many as 62 control respondents, namely mothers who gave birth to live babies in 2018 in Langkat Regency in 2018. This study used bivariate analysis. The results show that parity has significant effect on the incidence of fetal death in the womb. Time interval of the mother giving birth has significant effect on the incidence of fetal death in the womb. Medical history has no significant effect on the incidence of fetal death in the womb. Exposure to cigarette smoke has significant effect on the incidence of fetal death in the womb.*

Key Words: Maternal, Exposure, Cigarette Smoke, Fetal Death, Womb.

1. INTRODUCTION

Health development is one of the national development efforts, which is directed at achieving awareness, willingness to live a healthy life for oneself in the health sector. The vision of developing a healthy and prosperous Indonesia is so that people live healthy lives, have the ability to reach quality health services fairly and equitably and have the highest health status (Murwati, 2015).

One of the indicators of a country's welfare is the infant mortality rate which reflects the level of public health problems and is an indicator commonly used as an index of economic development, an indicator of quality of life, and the main component determining people's life expectancy (Kementerian Kesehatan, 2016). The infant mortality rate is an indicator of the welfare of a nation that reflects the level of public health problems and is an indicator commonly used as an index of economic development, an indicator of quality of life, and the main component determining the life expectancy of a society (World Health Organization, 2016).

An important component of infant mortality is neonatal mortality which is still a challenge and problem in every country and a major threat to the achievement of sustainable

development goals. Although the number has been successfully reduced, compared to the rate of decline in under-five mortality, the infant mortality rate is slower with a greater contributor to death (70%) especially in the first month of birth. The 2015 Millennium Development Goals report states that out of 6 million children under the age of 5 years, around 2.8 million of them die in the neonatal period with increasing proportions for every region in the world.

Indonesia is also one of the countries with a fairly high infant mortality rate of 25.5% in 2016 (Badan Pusat Statistik, 2016). For North Sumatra, based on the 2016 North Sumatra District/City health profile report, out of 281,449 live births, 1,132 babies died before the age of 1 year. Based on this figure, it can be roughly calculated that the estimated infant mortality rate in North Sumatra in 2016 is 4/1,000 live births. This low number is possible because the reported death cases are only deaths that occur in health care facilities, while the death cases that occur in the community have not been fully reported and it is necessary to collect precise infant mortality data through survey activities (Dinas Kesehatan Provinsi Sumatera Utara, 2017).

The infant mortality rate reflects the magnitude of health problems that have a direct impact on infant mortality, such as diarrhea, respiratory infections, or prenatal conditions, and also reflects the level of maternal health, environmental health conditions and the level of socio-economic development of the community. Two thirds of infant mortality is infant mortality. neonatal and two-thirds of these neonatal deaths are perinatal deaths (Isakh, 2011).

The cause of death in the perinatal group was caused by fetal death in the womb as much as 29.5% and low birth weight as much as 11.2%, this means that the condition of the mother before and during pregnancy greatly determines the condition of the baby. The challenge ahead is to prepare expectant mothers to be fully prepared for pregnancy and childbirth and to ensure a healthy environment that can protect babies from infection. For ages above neonatal to one year, the main causes of death are infections, especially pneumonia and diarrhea. This is closely related to the mother's healthy lifestyle and also local environmental conditions (Kementerian Kesehatan, 2016).

The death of the fetus in the womb as the death of the fetus in the womb. The condition of the fetus that has died since it was still in the womb when the gestational age is over 20-28 weeks. Generally, cases of fetal death in the womb cannot be prevented, but the risk can still be reduced by knowing the

causative factors and appropriate preventive measures (Wikjosastro, 2013).

Infant mortality can also be caused by a lack of awareness of maternal health. Many factors influence it, including, mothers rarely check their womb to the midwife, pregnant at a young age, too close a distance, pregnant in old age, lack of nutritional intake for mothers and their babies, food consumed by mothers is not clean, sanitation and hygiene facilities are not good. adequate. In addition, the condition of the mother during pregnancy that is not good and healthy can also have an impact on the womb, such as physical factors, psychological factors, environmental, social, and cultural factors (Sulistyawati, 2014).

In addition to the age factor that causes fetal death in the womb and the death of the mother giving birth, there are also several factors that cause fetal death to occur in a mother's womb, such as the factor of family planning programs (for healthy and prosperous families) that are not implemented properly, the economy with the increasing burden of family life so that they cannot buy food that has more nutritional value (unhealthy lifestyle) and air pollution including smoke from factories and exposure to cigarette smoke which can cause adverse effects on pregnant women because it contains nicotine and monoxide (CO) (Sulistyawati, 2014).

The purpose of this research is to find out and analyze effect of maternal and exposure to cigarette smoke factors on the incidence of fetal death in the womb in Langkat Regency in 2019.

2. RESEARCH METHODS

This type of research is an analytical observation research, with a case control design. Analytical observation is a survey or research that explores how and why this phenomenon occurs (Pandiangan, 2015). Then analyze the dynamics of the correlation between phenomena or between risk factors and effect factors (Pandiangan et al., 2021). Case control is a study conducted by comparing two groups, namely the case group and the control group (Octiva et al., 2018). A case-control study was carried out by identifying the case group and control group, then retrospectively examined risk factors that might explain whether cases and controls could be exposed to exposure or not (Notoatmodjo, 2014). The reason for using case control in this study is to make it easier, provide results faster, and does not require a large sample (Pandia et al., 2018).

The population is the entire source of data needed in a study (Pandiangan, 2018). The case population in this study were mothers who the incidence of fetal death in the womb in Langkat Regency in 2018 while the control population was mothers who gave birth to live babies in 2018 with a ratio of 1:2 cases and controls to make it easier to determine what factors were most important. influence on the incidence of fetal death in the womb in Langkat Regency. The sampling technique in the control group was taken by purposive sampling technique. Purposive sampling technique is sampling done by selecting a sample among the population in accordance with what the researcher wants (objectives/problems in the study), so that the sample can represent the characteristics of the population that have been known previously (Octiva et al., 2021). Researchers took a total of 31 respondents in the case group sample, taken based on data

recorded from the Public Health Center and the Langkat Regency Health Office with a comparison of the number of control group samples as many as 62 control respondents, namely mothers who gave birth to live babies in 2018 in Langkat Regency in 2018.

This study used bivariate analysis. Bivariate analysis is an analysis used to determine the relationship between the independent variable and the dependent variable by using statistical tests (Pandiangan et al., 2018). Analysis using a computer with the help of a computer program with a significant level of $p=0.05$. In this study, the chi square statistical test was used using the Statistical Product and Service Solutions program (Tobing et al., 2018). Chi square statistical test is a statistical test used to determine the relationship and influence between categorical and categorical variables. The chi square statistical test has the condition that the expected value is less than 5, a maximum of 20% of the number of cells (Pandiangan et al., 2022).

3. RESULT

Description of Research Site

Langkat Regency is a regency located in North Sumatra, Indonesia. The capital city is Pematang Jaya. Langkat Regency consists of 23 sub-districts with an area of 6,272 km² and a population of 902,986 people. The name Langkat is taken from the name of the Langkat Sultanate which once existed in what is now a small town called Tanjung Pura, about 20 km from Pematang Jaya. Former vice president Adam Malik studied here. During the Dutch Government, Langkat Regency was still a residency and sultanate (kingdom) with a government leader called the Resident and domiciled in Pangkalan Susu with the Resident Morry Agesten (indigenous/bumiputera) were in the hands of the Langkat sultanate government.

The Sultanate of Langkat has been occupied successively by:

- 1.Sultan Haji Musa Almahadamsyah 1865-1892.
- 2.Sultan Tengku Abdul Aziz Abdul Jalik Rakhmatsyah 1893-1927.
- 3.Sultan Mahmud 1927-1945/46.

Geographically, Langkat Regency is located at 3°14'00"-4°13'00" North Latitude, 97°52'00"-98°45'00" East Longitude and 4-105 m above sea level. Langkat Regency occupies an area of $\pm 6,263.29$ km² (626,329 Ha) consisting of 23 sub-districts and 240 villages and 37 definitive sub-districts. Area Langkat Regency in the north is bordered by Aceh Province and the Malacca Strait, in the south by Karo Regency, in the west by Aceh Province, and in the east by Deli Serdang Regency and Pangkalan Susu City. Based on the area by sub-district in Langkat Regency, the largest area is Secanggang sub-district with an area of 1,101.83 km² or 17.59 percent followed by Batang Serangan sub-district with an area of 899.38 km² or 14.36 percent. While the smallest area is Pangkalan Susu sub-district with an area of 42.05 km² or 0.67 percent of the total area of Langkat Regency.

Like other areas in North Sumatra, Langkat Regency has a tropical climate. So this area has 2 seasons, namely the dry season and the rainy season. The dry season and the rainy season are usually marked by the number of rainy days and the volume of rainfall in the month of the season.

Based on the figures from the 2010 Population Census, the population of Langkat Regency is 967,535 people with a population density of 154.48 people per km². Meanwhile, the

population growth rate of Langkat Regency in 2010 compared to 2000 was 0.88 percent per year. For the year 2015 based on the projected population of Langkat Regency 1,013,385 people. The highest population is in Pematang Jaya District, which is 86,217 people with a population density of 792.07 people per km², while the least population is in Pematang Jaya District of 13,591 people. Pangkalan Susu District is the most densely populated District with a density of 1,058.03 people per km² and Secanggang District is the District with the smallest population density of 37.86 people per km². The population of Langkat Regency per gender is more male than female population. In 2015 the male population was 510,288 people, while the female population was 503,097 people with a sex ratio of 101.43 percent.

Health is one of the most important things in human life, with the availability of health facilities and infrastructure, it is very helpful in efforts to improve public health. There are 1 government-owned public hospital, 5 private public hospitals. There are 100 beds for government general hospital, while for private general hospital there are 420. Health facilities at the sub-district and rural levels in Langkat Regency are adequate. In 2015, there were 30 Puskesmas, 171 sub-health centers and 1,308 Posyandu spread across each sub-district. There are 138 general practitioners, 63 dentists and 17 specialist doctors available in Langkat Regency. Meanwhile, there are 932 other medical personnel such as midwives.

Based on the recording and reporting from the Public Health Centers in Langkat Regency, which were collected and using the existing formulation, the infant mortality rate of 1.98 was rounded up to 2 per 1,000 live births. The number of fetal deaths in the womb is 31 people out of 20,604 live births. In 2016 the infant mortality rate in Langkat was 1.68 per 1000 live births. This low number is possible because cases of death that occur in health care facilities, while cases of death that occur in the community have not been fully reported. So to determine the infant mortality rate accurately, data collection is needed through survey activities and what factors influence it (Dinas Kesehatan Kabupaten Langkat, 2018).

Bivariate Analysis

Table 1. Effect of Parity on the Incidence of Fetal Death in the Womb

Parity	The Incidence of Fetal Death in the Womb				P
	Case		Control		
	n	%	n	%	
1-5 Child	24	77.42	58	93.55	0.038
0 and >5 Child	7	22.58	4	6.45	
Total	31	100	62	100	

Table 2. Effect of Time Interval of the Mother Giving Birth on the Incidence of Fetal Death in the Womb

Time Interval of the Mother Giving Birth	The Incidence of Fetal Death in the Womb				P
	Case		Control		
	n	%	n	%	
0 Month	6	19.35	4	6.45	0.000
≥ 2 Year	3	9.68	51	82.26	
< 2 Year	22	70.97	7	11.29	
Total	31	100	62	100	

Table 3. Effect of Medical History on the Incidence of Fetal Death in the Womb

Medical History	The Incidence of Fetal Death in the Womb				P
	Case		Control		
	n	%	n	%	
Good	28	90.32	61	98.39	0.106
Bad	3	9.68	1	1.61	
Total	31	100	62	100	

Table 4. Effect of Exposure to Cigarette Smoke on the Incidence of Fetal Death in the Womb

Exposure to Cigarette Smoke	The Incidence of Fetal Death in the Womb				P
	Case		Control		
	N	%	n	%	
Not Exposure	2	6.45	47	75.81	0.000
Exposure	29	93.55	15	24.19	
Total	31	100	62	100	

The results show Table 1, 2, 3, and 4 that parity has significant effect on the incidence of fetal death in the womb. Time interval of the mother giving birth has significant effect on the incidence of fetal death in the womb. Medical history has no significant effect on the incidence of fetal death in the womb. Exposure to cigarette smoke has significant effect on the incidence of fetal death in the womb.

4. CONCLUSIONS

The results show that parity has significant effect on the incidence of fetal death in the womb. Time interval of the mother giving birth has significant effect on the incidence of fetal death in the womb. Medical history has no significant effect on the incidence of fetal death in the womb. Exposure to cigarette smoke has significant effect on the incidence of fetal death in the womb.

It is expected to be more careful about maternal health by increasing the knowledge of pregnant women and their families on how to take action if they encounter the same case so that the problems faced, especially the incidence of fetal death in the womb can be handled properly such as providing counseling about the risks obtained if parity and The distance between pregnancies is too close, besides that, it is necessary to improve

health promotion efforts through counseling on contraceptives in order to regulate the distance and limit pregnancy plans that are adjusted to the condition of the mother as well as the income condition in the family. Providing counseling about the risks if pregnant women do abdominal massage, as well as being able to provide counseling to teenagers about the importance of education in influencing knowledge, especially knowledge about health, especially about premarital sex so as to reduce the number of pregnancies at a young age.

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