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# FACTORS CONTRIBUTING TO MATERNAL MORTALITY IN TASIKMALAYA CITY

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**Abstract**

*Maternal deaths reflect the risks faced by mothers during pregnancy, childbirth, and postpartum were affected by maternal nutritional status, state of ill health during pregnancy, the incidence of various complications in pregnancy, childbirth, and postpartum. Moreover, the availability and use of healthcare facilities, including prenatal and obstetric services, were also very affecting. So it is necessary to minimize the occurrence of maternal deaths. The government had made various efforts to reduce maternal mortality, but the results were still not optimal yet. If maternal mortality could be prevented as early as possible with appropriate identification, it could significantly reduce maternal mortality. The research aims to analyze the cause of maternal death in Tasikmalaya city in 2015. The research design used a quantitative approach in the form of observation. The population was all maternal deaths in Tasikmalaya City Health department in 2015. The study's affordable population was all maternal mortality data with a precise address and recorded in the OVM as many as 20 cases of death. Factors associated with maternal mortality were the problem relating to patients, health professionals, health infrastructure, and referrals. Moreover recording and reporting of maternal mortality also influenced the determination of proper diagnosis to decrease the number of maternal mortality. Maternal mortality was a problem that has never finished with the complexity of the cause. It requires efforts that involve many parties, not only the health authorities alone, but all stakeholders were supported by government regulation. This study could be the basis for further research on maternal mortality and can be used to enhance the knowledge of researchers, health professionals, and stakeholders about the factors that cause maternal deaths. This study's results are expected to know the causes of maternal mortality and used as guidelines in making policy to reduce maternal mortality.*

***Keywords**: Maternal mortality, related factors*

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## 1. Introduction

Family health problems are one of the issues that need attention. Family health problems are closely related to the condition of a mother who is one of the family's builders. A mother cannot escape the risk of pregnancy and childbirth. This


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condition affects the mother's health and also the family. There was a word of wisdom stated that from the womb of a mother born the best generation in the country. However, what needs to be studied is the high MMR (Maternal Mortality Rate).[1].

MMR reflects the risks during pregnancy and childbirth, which influenced by the nutritional status of the mother, poor health condition during pregnancy, the incidence of various complications in pregnancy, childbirth, and postpartum. As well as the availability and use of health service facilities, including prenatal and obstetric services, also greatly influence. MMR is an indicator of the quality and accessibility of health service facilities.[2]

The cause of maternal death, according to WHO, is caused by hemorrhage, infection, hypertension, complications during childbirth, and unsafe abortion.[3] The cause of maternal deaths in Indonesia in 2011 was hypertension hemorrhage and infection. Based on the results of the 2012 Indonesian Demographic Health Survey (IDHS), MMR reached 359 / 100,000 live births.[4] The maternal mortality rate in Indonesia was still higher than in other Southeast Asian countries. Maternal deaths in Indonesia were still dominated by three leading causes of death: hemorrhage, hypertension, and infection. Therefore, as a developing country, Indonesia had become one of the countries that had not been able to overcome maternal death problems. The number of maternal deaths in West Java in 2012 ranked first in Indonesia at 805 cases. More than 25% of maternal deaths in Indonesia in 2013 were caused by hypertension.[2] Based on the results of a preliminary study, in 2014, the number of cases of maternal deaths in West Java was 748 cases, and the causes of maternal death were hypertension (31%), hemorrhage (30%), and others (26%). In 2015 there were 823 cases of maternal deaths from 950,541 live births.[3]

Improving maternal health by reducing maternal mortality was the main goal to be achieved by increasing the number of facilities prepared for safe labor, and obstetric emergency services were in line with the principle that every pregnant woman was at risk of life-threatening complications.[5] The sooner the problem identified and treated, the more likely it was to avoid an emergency. Therefore, a critical requirement to reduce maternal deaths was the quality of service during pregnancy, childbirth, and postpartum. Also, an effective referral system, obstetric emergency services largely determine maternal deaths.[6] A reliable health system would make it easier to achieve health development goals, especially in reducing maternal mortality.

Identifying factors helped anticipate maternal deaths related to patients were age, parity, birth spacing, comorbidities, and maternal education. Health personnel consists of the first helper when complications occur. Health facility and infrastructure factors consist of the place where the mother died. Referral factors consist of the implementation of the referral and late referral.[7]

Indonesia committed to reducing the MMR through a significant global effort, namely the Safe Motherhood Initiative program, which launched in Nairobi with one of its aims was to reduce maternal mortality by 50%. However, the figures achieved in the MDGs did not change according to the initial initiative. This condition reflected the lack of coordination and approach in collecting maternal and newborn health data and documentation. If the form of death reporting was not


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equipped with specific characteristics, maternal deaths might be missed or misclassified..[8] Maternal death was a tragedy that carried a great burden on the family and described as a major public health problem in developing the country.[11] Maternal death was a tragedy that carried a great burden on the family and described as a major public health problem in developing the country. Maternal death at reproductive age also results in economic losses because women are the main pillars of the family that play an important role in educating children, providing health care, and helping the family economy. Therefore, childbirth must get facilities and participation of professionals, health services, local communities, and others.[10].

This research conducted in Tasikmalaya city, besides the number of cases of maternal deaths also based on the period of the incident, occurred more during pregnancy and childbirth. Based on the age, more cases occurred in the reproductive age of 20-35 years. The cause of maternal death was mostly due to eclampsia or severe preeclampsia. Besides, there were unrecording and not reporting maternal deaths for some reason, like a damaged computer that had not been repaired. The purpose of this study was to analyze the causes of maternal deaths in Tasikmalaya City in 2015.

## 2. Method

This study was a descriptive research with a cross-sectional approach. The research object was the OVM document completed with maternal medical records, maternal assessment forms at the Department of Health, and the hospital where maternal deaths were in 2015. The population was all maternal deaths at Tasikmalaya in 2015. The sample in this study was all data on maternal death cases. Tasikmalaya City, 2015 which had to meet the criteria: had a precise address and recorded in OVM and obtained 20 cases of death. The researcher took 10 cases with direct diagnoses as maternal death and 10 cases with other causes. The cases were not equipped with objective evidence like the results of the autopsy, other supporting laboratory results, and the results of consultations with other specialists related to the diagnosis of the cause of death. In the maternal medical report, the researcher analyzed maternal death based on other causes as a temporary conclusion of maternal death. The variables in this study were maternal characteristic factors (age, parity, birth distance, and education), health personnel factors (first helper when complications occur), health facility and infrastructure factors in health facilities (where the mother died), reference factors (referral implementation, referral delay).

## 3. Results and Discussion

**Table 1**. Distribution of Maternal Mortality Causes in Tasikmalaya City, 2015

| No. | Maternal Mortality Causes | F | % |
|---|---|---|---|
| 1. | Hemorrhage | 2 | 10 |
| 2. | Hypertension | 8 | 40 |
| 3. | Other | 10 | 50 |
| | Total | 20 | 100 |

Table 1 shows that maternal death mostly caused by other causes as much as 50% (1 case of amniotic water embolism with a history of G3P2A1 at 38 years mother's age). Four cases with a history of heart disease (3 cases had suffered before pregnancy, and 1 case occurred during pregnancy.) One death case caused by lupus, the patient had suffered for two years. One case had asthma and was detected before


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pregnancy. One case with pulmonary edema with a history of psychosis. One case with active pulmonary tuberculosis with a history mother examined for the first time at six months and one case with a diagnosis of hyperthyroidism with a 38-year history of maternal age G5P4A0.

Maternal health problems would never be resolved because it would lead to other problems. When a mother dies, the child being born motherless. The baby automatically loses the right to get breastmilk, which was the best food for the baby and affects the baby's growth and development. Also, when the baby foster by other families, he will not get the love of his mother and indirectly affects the child's development in the future.

**Tabel 2** Distribusi frekuensi kematian maternal di Kota Tasikmalaya tahun 2015

| Variable | Category | F | % |
|---|---|---|---|
| Age | ≤ 20 | 2 | 10 |
| | 21– 35 | 10 | 50 |
| | >35 | 8 | 40 |
| Paritas | 0 | 7 | 35 |
| | 1-3 | 9 | 45 |
| | ≥4 | 4 | 20 |
| Pregnancy Distance | <2 year | 1 | 7,7 |
| | ≥2 year | 12 | 92,3 |
| Maternal education | <6 | 1 | 5 |
| | 7-9 | 11 | 55 |
| | 10-12 | 4 | 20 |
| | >12 | 4 | 20 |
| First Helper | Midwife | 20 | 100 |
| Health Facility | Home | 1 | 5 |
| | Trip to refferal Hospital | 1 | 5 |
| | | 18 | 90 |
| Refferal Status | Did not refferal | 1 | 5 |
| | DOA | 1 | 5 |
| | Death at hospital: | | |
| | <2 Jam | 14 | 70 |
| | >2 Jam | 4 | 25 |

Table 2 shows that most maternal deaths occurred in the 21-35 years, nullipara, and birth distance of fewer than two years..

The finding shows that 50% (10 cases) died in the age range of 21-35 years; many pregnant women at a healthy reproductive age were at a safe age to get pregnant, so the risk of death was at that age. At the age of 20 years, pregnancy is risky for complications. These complications include preeclampsia and eclampsia. The maturity of the reproductive organs is one factor in the age range; it is an important factor that needs to be considered by the mother to determine the ideal age for getting pregnant. The physiology of the human body has a stage of development that will continually change towards maturity; the reproductive system is no exception.

If further studied, one factor that played a role in maternal death was mothers' age. Physiologically, specific age criteria become a marker of the maturity of sexual organs, and the classification of certain ages become determinants of the maximum limit for risky pregnancies. So it can be assumed that gestational age can be a risk cause of maternal death during labor. Two types of age criteria are at risk for childbirth to cause death, namely before the age of 20 and after age 35 years.

There was a presumption that family economic play an important role; it was related to the family's ability to purchasing for food consumption and dietary patterns. From 10 cases found that the husbands have labor work and had a low salary and likely hard to fulfill the mothers' dietary needs.

The finding of this study shows that there were 9 cases had a history with parity 1-3. This finding can be assumed that many pregnant mothers did not understand the


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important role of birth distancing. BKKBN, through the Directorate of Mother, Infant, and Child Survival (2007), stated that "Four Too" as maternal death causes: too young, too old, too close, and too many. This statement used a campaign to the whole community, especially mothers, to be expected, giving more attention to their reproduction. The finding shows that 10 of 20 death cases have a history of "too old" and "too many". There were several reasons that BKKBN did not recommend "too many" pregnancy; first, the occurrence of pregnancy disorders, such as the placenta previa. Second, it inhibits the labor process by disrupting the contraction process, abnormalities in position, and fetal position, the occurrence of postpartum hemorrhage. Third, Lessen time for breastfeeding. Fourth, it can affect the baby's' development. Fifth, adding the family economy burden. Those reasons should be considered when man and wife were planning the addition of children.

Parity played an important role in maternal deaths. The physiological review showed that there was a limit for a mother to have a safe delivery. When viewed from the mother's perspective that mothers did not have a good plan to determine the number of children. Also, there was a belief that the child as a gift from God, including process-related like unprotected sex.

This belief had become one of the factors that had an impact on uncontrolled and unplanned pregnancies. It increases the possibility of getting pregnant more than twice and became riskier to had complications. A good understanding of pregnancy needs to be explained to the mother. Various approaches also seem necessary. The husband's role in this matter was also considered necessary because being married and having children was a planned decision..

There was a need to increase family understanding about a live child was a succession of childbirth, and if the number of the live child was sufficient, parents considered to stop increasing the number of children. Husband couples wife need to get to know and use family planning in order to prevent both planned and unplanned pregnancies. The study finding shows that 92.3% (12 cases) had birth distancing $\geq$ for two years. Pregnancy distancing is important for the health of the mother and child. When pregnancy occurred less than two years, the uterine was not fully recovered; it could also be found complications during pregnancy, childbirth, postpartum like anemia, prolonged labor, abnormalities in the fetus, hemorrhage, and other complications.

Pregnant distancing also played a role in increasing the risk of maternal death. The female reproductive organs have their own time to be ready for the next pregnancy process. It is said to be the optimal time for subsequent pregnancies if it meets the minimum time requirements, while the maximum limit of reproduction is five years. In subsequent pregnancies, it is necessary to consider other factors, such as the mother's readiness for lactation in infants in previous births.

The finding in this study shows 55% (11 cases); the mother had a 7-9 year education history. This finding can be presumed that mothers only had primary education, and it was influencing the decision making on the action, including labor. Mothers with low levels of education can be assured of having limited knowledge about childbirth both regarding facilities for delivery and birth attendants.


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This study found that all respondents' first helper was midwives, but the data did not provide adequate information that maternal deaths occurred in the first helper placed. However, there were assumptions in the community that when maternal death occurs, the first helper would be blamed. There was a possibility that mothers were "too late" to get health workers' services. Most communities would seek traditional birth attendance first before coming to health workers. Traditional birth attendance had limited knowledge, even though several traditional attendances were trained but still many traditional birth attendants who did not. Nowadays, traditional birth attendance was assisting midwives but did not do the action by themself. This reason increased the risk of maternal death.

The study found that 90% (18 cases) of maternal deaths occurred in health facilities (hospitals). Places where maternal death occurred played a role in maternal death. Many people preferred traditional birth attendance as the helper than went to health facilities. Referred to the law, everyone has the right to live and defend their life. The context of sustaining life was related to the health sector, and it was civil rights, and it became the government's obligation to fulfill it. One of the efforts was to make regulations. The availability of adequate and standards of health facilities in childbirth should be fulfilled, not only in big cities but evenly spread to remote areas. This effort was to support the availability of adequate health facilities to help with maternal delivery and directly reduce maternal mortality.

**Table 3** Maternal Death Occurred in Hospital in Tasikmalaya, 2015

| No. | Hospital Code | Hospital Status | Maternal Death Occurred in Hospital* | | | | | | f | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | DOA | | < 2 Hours | | >2 Hours | | | |
| | | | N | % | N | % | N | % | f | % |
| 1. | A | Regional government | 1 | 6,6 | 5 | 33,4 | 9 | 60 | 15 | 100 |
| 2. | B | Private | - | 0 | - | 0 | 2 | 100 | 2 | 100 |
| 3. | C | Private | - | 0 | - | 0 | 2 | 100 | 2 | 100 |

*1 case of maternal death occurred at home. So it is not included in the table.

Table 3 shows that most maternal deaths are referral cases (15 cases) in the regional government hospital. Based on the finding, referral plays an important role in maternal labor. Many cases were constrained by the process of referral for complications in pregnancy, childbirth, and postpartum. Every pregnancy could have a risk. The risk can occur to anyone, anytime, and anywhere so that family vigilance, as well as health workers when dealing with mothers, is needed. There is also a need for communication between mothers and health workers beforehand to be more prepared facing labor complications or other unwanted risks. Tasikmalaya City already had several programs to overcome referral problems as an embodiment of the Tasikmalaya Health Department missions, namely: "Enhancing Partnerships with Health Stakeholders and Providers". To implement the mission, the government formed "RW Siaga" referred to Minister of Health Decree No. 1529 of 2010 concerning General Guidelines for Active Desa and Kelurahan Active Alerts. It regulated the message of


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stakeholders at various levels of government, especially at the district and city levels, in making the program a success. In this program, a system had been set up to increase the role of the community in increasing alert awareness, one of which was by providing houses and/or vehicles for delivery assistance with emergencies.

Late referral related to the patient's referral system in the area, therefore it is essential to establish a referral system that is always ready to handle emergency cases, especially in labor. Not only government health service facilities, but also private health facilities also need to be involved in the referral system. A good health referral service system can certainly prevent delays in referral, especially in the case of emergency labor. This is not an easy thing, and there needs to be the cooperation of all parties, both from the government and the community so that awareness arises of the importance of prompt and proper handling so that death does not occur and the referral process is not late.

The geographical condition of an area is influential on maternal mortality. Geographically, Tasikmalaya city is a hilly area so that difficulties can be encountered when referring. There are road and city developments that allow easier access, but with hilly terrain, it remains difficult for some people. Winding road slowed access to the nearest health service facility.

Tasikmalaya also has a reasonably high rainfall condition to complicate access from one place to another. There is also a possibility of landslides. Some road conditions are also found in damaged conditions, and some roads cannot be passed by vehicles. Based on geographical conditions, it is not an obstacle to accessing health facilities.

Residential areas with urban characteristics should indicate the ease of access to health facilities, both private and government, known to have a better service system. In terms of quantity, it was sure that the number of health facilities was more; in terms of quality, service facilities were also considered good. Besides, with many health services in the area, mothers can choose the desired health service facilities.

Based on family characteristics, the majority had private vehicles that can be used to go to health facilities. However, some people who did not have a vehicle could take public transportation. Each Community Health Center only had one PONED (Basic Emergency Neonatal Obstetric Services) ambulance, which causes more limited referral services. This condition contributes significantly to the late referral of maternal births, which results in death.

The existence of health facilities in each sub-district and village and the presence of village midwives make it easy to make referrals. Long-distance can be a factor that inhibits referral. With exceptional distance and difficulty in getting vehicles to refer, it is possible to delay referrals. One case was the birth canal hemorrhage that required immediate help, but due to the absence of private vehicles, families and midwives needed more time to find the vehicle first, plus the distance was far enough so that there was a delay handling in the referral facility. If the patients were untreated for a long time, it could cause a shock, and death could occur before reaching the referral health facility.

Traffic jams can be a factor that inhibits the referral process because it can take a long time to delay the


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referral facility. The family needs to understand the first basic handling of pregnancy emergencies to help maintain the mother's condition before reaching the point of reference.

Health insurance is an indirect factor in maternal mortality. The referral process with health insurance requires quite complicated procedures for making referrals. Referral administration must be obtained from residential areas and first-level health facilities. The procedure is a standard procedure that must be performed as a screening process for patients so that patients treated at hospitals or health facilities at a higher level were not treated at the first level of health care facilities.

In Tasikmalaya, there was a Regional Health Insurance (Jamkesda), which helps finance health services for residents. Since 2016, the implementation of Jamkesda had been integrated with BPJS as a public forum with one-stop financing. BPJS is one of the manifestations of Law 24/2011 concerning the Organizing Agency for Social Security, a mandate from the implementation of national health insurance (JKN), which must be carried out as mandated by Law 40/2004 concerning the National Social Security System. In the field implementation, a tiered health service system was implemented, which serves to filter out the urgency of the need for health services in the community so that health services did not overlap at one level, but were resolved at the previous levels..

However, this did not apply to emergency patients. A wrong understanding by the health facility regarding administration that must be completed before the patient was treated, creates its complications. Patients with emergency labor should be prioritized without seeing and taking care of administrative procedures, which took a long time, leading to late treatment. It is ironic if administrative care takes precedence, and even in some cases without health insurance, there needs to be a down payment in cases of an emergency delivery. It was indicated the readiness of the health care system in dealing with emergency patients, especially in childbirth.

## 4. Conclusion

Some factors that cause maternal deaths should be avoided include, among other factors, patient characteristics such as delay in seeking treatment, unwanted pregnancy, lack of early detection, and refusal of referral/treatment, from the factors of health personnel, among others, delay in providing treatment, pre-referral stabilization, lack of early detection. From the health facility factor, the ICU was inadequate. From the referral factors, among others: refusing a referral, inaccurate referral, and late referral. Further research is needed with comprehensive data to analyze the causes of maternal death.

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