



## Analysis of Causes of Maternal Mortality in Sukabumi West Java

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### ARTICLE INFO

#### Article history:

Received June 27, 2019

Accepted August 10, 2019

Published June 05, 2020

#### Keyword:

Factors that cause maternal mortality

Maternal mortality

Pregnancy

Maternity

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DOI: <https://doi.org/10.30604/jika.v5i1.209>

### ABSTRACT

There were 54 maternal mortality in Sukabumi District in 2015. The government has made various efforts to reduce maternal mortality cases, but the results have not been optimal. Identification of appropriate causes of maternal mortality provides valuable input in the prevention of future mortality. The objective of this study is to analyze the factors that play a role in maternal mortality and explore how these factors cause maternal mortality. Design research uses explanatory sequential designated mixed methods which are carried out in stages. The first step was to conduct a documentation study of 54 cases of maternal mortality at Verbal Maternal Autopsy and a statistical calculation was made using a cross-sectional approach. The results of the document study were then carried out qualitatively by in-depth interview methods. The results showed that there were groupings of maternal mortality in the district of Sukabumi namely in the District of Cibadak, District of Cicantayan, District of Cisaat, District of Sukaraja and District of Cirenghas. Factors that play a role in maternal mortality are patient, health personnel factors, health facility factors, and referral obstacle factors, and there are recording and reporting factors related to maternal mortality. Efforts to reduce maternal mortality are done through strengthening community empowerment systems and good services. Conclusions maternal mortality is a difficult thing to solve with complexity because it requires efforts that involve various parties.

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## Analisis penyebab kematian maternal di kabupaten Sukabumi

### ABSTRAK

Kasus kematian maternal di Kabupaten Sukabumi tahun 2015 tercatat 54 kasus kematian maternal. Pemerintah telah melakukan berbagai upaya untuk menurunkan kasus kematian maternal, tetapi hasilnya belum optimal. Identifikasi penyebab kematian maternal yang tepat, memberikan masukan berharga dalam upaya pencegahan kematian dimasa datang. Tujuan penelitian ini adalah menganalisis faktor yang berperan dalam kematian maternal dan menggali bagaimana faktor tersebut menyebabkan kematian maternal. Desain penelitian menggunakan squential ekplanatori disagn mixed methode yang dilakukan secara bertahap. Tahap pertama melakukan studi dokumentasi terhadap 54 kasus kematian maternal pada Otopsi Verbal Maternal dan dilakukan perhitungan statistik dengan pendekatan secara cross sectional. Hasil studi dokumen kemudian dilakukan kualitatif dengan metode wawancara mendalam. Hasil penelitian menunjukkan bahwa terdapat pengelompokan kematian maternal di kabupaten sukabumi yaitu di Kecamatan cibadak, Kecamatan cicantayan, Kecamatan cisaat, Kecamatan sukaraja dan Kecamatan cirenghas. Faktor yang berperan dalam kematian maternal ini adalah faktor pasien, faktor

#### Kata kunci:

Penyebab kematian maternal

Kematian maternal

Maternal

Kehamilan

tenaga kesehatan, faktor fasilitas kesehatan dan faktor hambatan rujukan serta adanya faktor pencatatan dan pelaporan terkait kematian maternal. Upaya penurunan kematian maternal dilakukan melalui penguatan sistem pemberdayaan masyarakat dan pelayanan yang baik. Kesimpulan faktor kematian ibu merupakan hal yang sulit untuk diselesaikan dengan kompleksitas karena memerlukan upaya yang melibatkan berbagai pihak.

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## Introduction

Maternal mortality according to the limitations of *The Tenth Revision of the International Classification of Disease (ICD-10)* are women's deaths that occur during pregnancy, or within 42 days after the termination of the pregnancy, independent of the duration and location of the pregnancy, caused by anything related to pregnancy, or which is aggravated by the pregnancy or its treatment, but not death caused by accident or accident. (WHO / UNICEF 2012)

The maternal mortality rate is the number of female deaths during pregnancy or 42 days from termination of pregnancy regardless of the length and place of delivery, which is due to the pregnancy or its management, and not because of other reasons. (Bappenas, 2014)

The increase in the number of maternal mortality generally occurs directly or indirectly. The difference between direct maternal mortality that results from complications of pregnancy, childbirth, or management of the two, and indirect maternal mortality (munjaja S, et al, 2012) which is pregnancy-related death in patients with preexisting or newly developed health problems which is not related to pregnancy. Whereas indirect factors causing maternal mortality are due to the large number of cases of 3T (3 Too late, i.e being late in reaching the facility, being late in getting prompt and appropriate help in service facilities, being late in recognizing danger signs of pregnancy and childbirth) and 4T (4 Too, i.e. too young, too old, too often, too much), it is related to access, socio-cultural, educational and economic factors. (Lanre-Abas, 2008).

Almost all cases of maternal mortality can be prevented, an estimated 74% of maternal mortality can be prevented, if all women have access to measures to prevent or treat during pregnancy and at the time of delivery complications in certain emergency obstetric emergencies. In many countries with high maternal mortality rates, it is necessary to improve appropriate health services. Poverty, lack of information, and cultural barriers are obstacles for women in accessing information to prevent maternal illness and death. (Hunt, et al. 2007)

The implementation of the referral system in Indonesia has been arranged in a tiered or level form, that is, the first, second and third level health services, which in its implementation do not stand alone but are in a system and are interconnected. If the primary health service is unable to perform primary-level medical treatment, then he / she surrenders the responsibility to the level of service above it, and so on. If all the supporting factors (government, technology, transportation) are fulfilled, the referral process

will run well and the community will be handled appropriately immediately. (RI KK, 2012)

Based on the data above shows the number of maternal mortality varies in Sukabumi District. Various efforts have been carried out, among others, by placing midwives in villages, empowering families and communities by using the Maternal and Child Health Book (KIA Book) and the Birth Planning and Complications Prevention Program (P4K), and the provision of health facilities Basic Neonatal Obstetric Services (PONED) in the Community Health care and Neonatal Comprehensive Obstetric Services (PONEK) at the Hospital. Another effort is undertaken to use Childbirth Guarantee which has been conducted since 2011. However, it has not shown optimal results in reducing maternal mortality. (Indonesian R. 2014).

## Method

The design of this study uses the design research of *sequential explanatory mixed methods*, which is a research method that combines or clusters between quantitative and qualitative methods to be used together in a study, in order to obtain more comprehensive, valid, reliable and objective data. In this strategy the first stage is collecting and analyzing quantitative data with *cross sectional* studies then followed by collecting and analyzing qualitative data that is built based on initial quantitative results. The sample of this research is 54 cases of maternal mortality.

This profundity or priority is given to quantitative data. In the initial stages both in data collection and analysis using quantitative methods. Sukabumi Regency, West Java, and continued with qualitative, namely from house to house to conduct interviews with families.

Data collection and analysis to the two methods were carried out separately, but made continuous. The first step is to analyze the chronology of maternal mortality in the form of secondary data obtained from verbal maternal autopsy data (OVM) in the Sukabumi District Health Office. The second stage is primary data obtained directly from respondents through *in-depth interviews* with families, health workers, the person in charge of recording and reporting as a triangulation of quantitative findings about the causes of maternal mortality.

Results and Discussion

The number of maternal mortality in Sukabumi District in 2015 amounted to 54 deaths, cases of preventable causes amounted to 48 cases (79.6.3%) and 6 cases that could not be prevented (20.4%) meaning that of death cases in The

majority of the causes in Sukabumi Regency can be prevented as long as the initial treatment of patients can be maximized and cases of death that cannot be prevented are usually because before pregnancy the patient already has a history of pre-existing illnesses or is late for the referral.

Table 1  
 Frequency Distribution of Characteristics of Maternal mortality in Sukabumi District (N = 54)

Characteristics	Total	Percentage (%)
Factors that cause maternal mortality		
Bleeding	18	33,3
Pre-eclampsia/Eclampsia	18	33,3
Heart-disease	2	3,7
Embolism	1	1,9
Atonia Uteri	3	5,6
Infection	5	9,2
Others	7	13,0
Mortality Period		
Pregnant	16	29,7
Maternity	5	9,2
Postpartum	33	61,1
Place of Mortality		
Non Health Facilities	7	13,0
Health Facilities	47	87,0
First Aid		
Non Health Workers	6	11,1
Health Workers	48	88,9
Referral		
Not referenced	8	14,8
Referred	46	85,2

Table 1 shows the results that most maternal mortality occurred due to direct causes such as bleeding in 18 cases (33.3%), occurred in postpartum 33 cases (61.1%), place of mortality in health facilities 47 (87%), first aid 48 (88.9%), and maternal mortality referred by 46 cases (85.2%).

Preventable maternal mortality are maternal mortality that should be prevented if the patient gets help or comes at

the right time so that they can be helped professionally with adequate facilities and means, for maternal mortality that cannot be prevented are maternal mortality that cannot be avoided even though they have been every effort is made.

According to the research of Andromeda in 2012, health infrastructure is very supportive in maximizing services in preventable causes, but some mortality cannot be prevented.

Table 2  
 Frequency Distribution of Maternal mortality in Sukabumi District

Maternal Mortality	Total	Percentage %
Preventable	48	89
Can not be prevented	6	11
Total	54	100

Table 2 shows the results that preventable maternal mortality in Sukabumi district were largely preventable as much as 89% and for maternal mortality that can not be prevented as much as 11.1%, the case was found in mothers without risk factors and mothers had sought immediate help in health workers and adequate health facilities, mothers also routinely conduct pregnancy checks to find out early if there are problems in their pregnancy but still death occurs like mothers with causes of death due to heart and *Acute Coronari Syndrome* who died 22 weeks pregnant while infused and O2, RJP every 30 minutes, dower cath. *Suction*, and coma but the mother still died. Mothers with CHF Grade III e.c cardiomyopathy, e.c PEB and shock sepsis e.c susp DIC with childbirth as soon as *sectio secaria* face presentation. Mothers experience shortness and amniotic fluid emboli,

induction has been done and when the membranes rupture, the mother feels congested and the mother has fallen. The mother after *sectio secaria* for 1 day with *placenta accreta* and tubal rupture accompanied by disorders of blood vessels and kidneys had transfused 3 pumpkins before giving birth and 1 pumpkin after giving birth. Mothers *with impending eclampsia* and *pulmonary edema* after delivery by *sectio secaria*. PEB mothers since pregnancy and cardiac arrest. Postpartum mother with chronic liver disease and thrombocytopenia, the mother has severe bleeding.

The research of Kassebaum 2013 said that cases with the heart in patients especially pregnant women would be difficult to do, because there is a mass in the body that makes the body organs multiply to be able to pump blood to the heart, thereby making cardiac output decrease.

Table 3

Distribution of Frequency of Maternal Death that can be prevented and cannot be prevented based on the direct cause in Sukabumi District (N = 54)

Death Mortality	Directly Causes													
	Bleeding		Preeclampsia / eclampsia		Heart		Embolism		Atonia Uteri		Infection		Others	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Preventable	17	94,4	17	94,4	-	-	-	-	3	100	5	100	6	86
Can not be prevented	1	5,6	1	5,6	2	100	1	100	-	-	-	-	1	14
Total	18	100	18	100	2	100	1	100	3	100	5	100	7	100

Based on table 3 shows the results that most of the maternal mortality due to direct causes are bleeding 17 cases (94.4%) can be prevented, 1 case (5.6) cannot be prevented. Preeclampsia / eclampsia 17 cases (94.4%) could be prevented, 1 case (5.6%) could not be prevented.

Heart 2 cases (100%) cannot be prevented, embolism 1 case (100%) cannot be prevented. Atonia Uteri 3 cases (100%) can be prevented. Infections of 5 cases (100%) can be prevented. And others 6 cases (86%) can be prevented, 1 case (14%) cannot be prevented.

Table 4

Frequency Distribution of Preventable Maternal mortality in Sukabumi District (n = 48)

Kategori	Total	Percentage %
Patient Factor, Health Workers	12	25
Patient Factor, Health Facilities	5	10,4
Health Workers Factor, Health Facilities	4	8,3
Patient Factor, Health Workers, Health Facilities	3	6,2
Health Workers Factor, Referrals	7	15
Patient Factor, Health Workers, Referrals	8	17
Patient Factor, Health Facilities, Referrals	5	10,4
Patient Factor, Health Workers, Health Facilities, Referrals	4	8,3
Total	48	100

Table 4 shows that the cause of maternal death is not only a single cause but is multifactorial to patient factors, health workers, health facilities and referrals, most of the preventable causes of maternal mortality are due to patients and health personnel.

*Patient Factor*

Patient factors are the cause of preventable maternal mortality, maternal age can be one of the risk factors for causing maternal death. If seen the age of the mother has a big enough role and is one of the factors causing death in labor. A person's age can be an indicator of physiological maturity.

*"Usually here the principle is ... the child is married young ... the thing is, I'm afraid that it won't sell well over 20 years, but there are already soul mates too"*

*"If this region really is like that ... what's more my daughter doesn't go to school anymore ... and someone has applied for it ..."*

The results of interviews with local midwives also found that although mothers regularly visit ANC more than 4 times during pregnancy, the quality of ANC given is not good enough or not in accordance with established standards, one of which is hemoglobin examination, and a history of the disease, this affects delays in detecting emergencies and is too late to be handled.

*"If here the ANC examination has been ranted - heralded everywhere - even patients sometimes do not want to check, so we come home, but sometimes it is still missed, we have struggled to get to factories for socialization about ANC, but Well, it's hard, sometimes there are some who still miss the examination of HB, screening pregnant*

*women, yes sometimes there are also those who don't meet the standard when doing the examination ... "*

*"There are some cases of pregnancy that do not want to be exposed, there are still pregnant out of wedlock, so we health workers also sometimes find difficulties in monitoring ANC pregnant women,"*

*Health Workers Factor*

Health workers are very important in helping to reduce maternal mortality. Interviews conducted by several respondents that the community usually look for the shaman if something happens, but after the midwife's partnership with the shaman, most people have started to turn to health workers now, although it does not rule out there are still those who give up life and death to the shaman.

*"If the shaman here is no longer helping, if there is a patient who comes to the shaman and can be delivered, then he will be sent to the shaman, but if it can't be delivered, the shaman usually calls me .."*

*"Ooh ... we already have a partnership with the shaman, so now the shaman doesn't help except being trapped and forced ... it is almost never the shaman helps birth ..."*

*Health Facility Factors*

Health facilities are very helpful in reducing maternal mortality. The cause of maternal mortality that can be prevented is because of the limited operating room and drugs / tools and blood.

*"Yesterday, the community health center was taken to the closest hospital, but it was full, until 2 hours we*

*waited there, he said that he wanted to be tried, but eventually he moved the hospital again"*

*"In the district of Sukabumi there are still hospitals that are not yet soft, so sometimes they still like trouble".*

**Referral Factor**

Many cases that illustrate delays in referral and referrals that are not handled properly can cause maternal mortality. The cause of maternal mortality that can be prevented from a referral factor is because of refusing a referral, inaccurate

referral, and delays in referral. Even some of the patients also refused to be referred.

*"It's more comfortable being born at home, if it looks uncomfortable at the hospital ..."*

*"Well, there are still those who are not in the health facility, there are cases that have been referred because they have a history of heart, but yes because they do not want to give birth to the hospital, they move to another midwife, so sometimes midwives are cheated, refer to already severe conditions.*

**Table 5**  
 Frequency Distribution of Late Referrals for Maternal mortality in Sukabumi District (n = 46)

Variable	Total	%
Late Referrals		
Late	33	72
Not late	13	28
Total	46	100

Table 5 shows the results that 33 cases (72%) experienced delays in referral. Even though it has been referred, maternal mortality cannot be prevented, due to other delays such as habits in decision makers, namely family or husband so that individuals do not have the opportunity to be able to determine themselves. Delay in the handling of patients who come to the hospital at midnight becomes a frequent thing because the availability of specialists causes delays in saving mothers.

*"At that time the decision maker in the husband's family, while at that time the husband was out, so wait for the husband first, long finally ..."*

*"... the highest case of mortality is in the hospital, usually the cases that come are already very severe ... there are also some who come because of where it has been but the rooms are full, so it prevents us from taking action ...".*

**Table 6**  
 Frequency Distribution of Late Referrals for Maternal mortality in Sukabumi District (n = 33)

Late Referrals	Total	%
Late 1 (early detection and decision - making)	9	27,2
Late 2 (too late for reaching the health facility)	5	15,2
Late 3 (too late for getting first aid in the health facility )	3	9,1
Late 1,2	8	24,2
Late 1,3	2	6,1
Late 2,3	3	9,1
Late 1,2,3	3	9,1
Total	33	100

Based on table 6, the results show that many maternal mortality are caused by delays in early detection and decision making in 9 cases (27.2%).

Interviews obtained from several respondents indicate that mothers are late in early detection and decision making and late in reaching health facilities as stated by several respondents:

*"At that time the decision maker in the husband's family, while at that time the husband was out, so wait for the husband first, long finally ..."*

*"My child does not want to know, it's up to where he wants to be referred, but I'm confused about where to go, said midwife tea to RS S just, but I tel my child (husband) to be able to choose where to go,"*

Table 7 shows that the majority of cases with mileage to health facilities ≤5 km were 22 cases (67%). Although the distance is relatively close, there are obstacles when making a reference, namely the density at a certain time.

Based on the time builds of 20 cases (60.6%) less than 2 hours to get to health facilities, this is because health facilities are not only in the city district, there are several regions and spread so it does not need a long time.

Based on transportation means that the majority of mothers available means of transportation as many as 29 cases (87.9%). From the interviews it was found that although transportation is available, not all patients are referred to using ambulances from the community health center due to ambulance limitations, but if patients use their own means of transportation, they are usually constrained in the driver, and are unable to enter certain villages due to narrow alleys.

Based on health financing shows that most of the independent funding is 18 (54.5%), from interviews it was found that cost problems are often encountered in the community because of independent funding, many families refuse to be referred because they think about the high costs.



Table 7  
 Distribution of Frequency Causes of Referrals Obstacles to Maternal Mortality in Sukabumi District (n = 33)

Variabel	Jumlah	%
Mileage		
>5 km	11	33,3
≤5 km	22	67,0
Time builds		
>2 hours	13	39,4
≤2 hours	20	60,6
Transportation		
Unavailable	4	12,1
Available	29	87,9
Health funding		
Independent	18	54,5
Health Guarantee	15	45,5
Total	33	100

### Recording and Reporting on Maternal mortality

Recording and reporting can be one of the factors that influence the evaluation of maternal mortality. Recording and reporting is an important part in the interests of evaluation. The Government has issued on constitution number 24 of 2013 concerning Amendments to constitution number 23 of 2006 concerning Population Administration as an official regulation that also specifically regulates mortality registration and reporting.

This was then reported by the village civil apparatus to do the recording and reporting. But not only that midwives also play a role in the recording and reporting of mortality.

Analysis of maternal mortality can be done if there is a recording and reporting of maternal mortality. In this study in Sukabumi district all cases of maternal mortality were recorded and reported, all AMP data on maternal mortality was complete.

### Conclusions and Recommendations

Analysis of the causes of maternal mortality found in Sukabumi district is preventable mortality but still causes of death, namely patient factors related to maternal mortality that should be prevented are parity, accompanying disease factors, and ANC visits. Health workers and health facilities are still indirect factors related to maternal mortality. Barriers to referral are caused by early detection and decision making. The hindered referral process is related to lack of knowledge, the habit of utilizing the shaman as a first helper as well as the constraints in terms of costs that cause delays in decision makers to immediately refer.

All maternal mortality are recorded and reported in the Sukabumi District Office. The maternal mortality rate was not recorded at the cemetery, the Population and Civil

Registry Office because it had not been coordinated with information on deaths from the health department due to the location of the cemetery and the population office was near Sukabumi City.

Based on the in-depth interview, it was found that team coordination and cross-sectoral cooperation are factors that play a role and are related to maternal mortality in the recording and reporting of maternal mortality. Factors of health workers also play an important role in maternal mortality, the number of maternal mortality handled by health workers is not a center of death, but multifactors such as delays in decision making and distances that are difficult to reach, so it is too late to reach health facilities.

Further research is needed with village research that can dig deeper into the factors - factors that cause maternal death and research is needed elsewhere as a comparison of research that has been done.

Conduct an evaluation or evaluation on the competence of health workers in handling obstetric emergencies both in basic and referral health service levels. Furthermore, monitoring and evaluating the performance of midwives in carrying out maternal health services, especially in the implementation of counseling on the addition of health insurance information and increasing public education about risk factors, symptoms and signs of complications and efforts to prevent maternal mortality and promote the implementation of a number reduction program maternal mortality planned by the Department of Health resulting in cross-sectoral cooperation in reducing maternal mortality.

For the community it is necessary to know the signs and dangers of complications of pregnancy, maternity and postpartum, so that when mothers experience complications can be handled by health workers more quickly, and family members and the community need to prepare early for possible referral when mothers experience complications of pregnancy, maternity and postpartum, such as financing and transportation to prevent late referrals.

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