



ACTORS CONTRIBUTING IN THE DECLINE OF MATERNAL MORTALITY AND LABOR SERVICES PROBLEMS

Dewi Sari Rochmayani¹✉

¹Midwifery Program, STIKES Widya Husada Semarang

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Abstract

The targeted 102 per 100,000 live births maternal mortality rate (AKI) in Semarang has not been achieved yet. In the era of childbirth insurance program in 2011, AKI reached 119.9 per 100,000. Then, in the era of National Health Insurance (JKN) by Social Security Administrator (BPJS), the AKI in 2004 was 109,2 per 100.000 live births. The study design was qualitative with grounded theory approach. There were 4 research focuses: 1) actors who contribute in labor services; 2) referral delay; 3) Community Health Center (Puskesmas) with basic essential obstetric–neonatal service (Poned); 4) profile of each obstetric services level in Semarang. The results showed that there were 2 groups of actors who contributed to prevention of maternal death. The first group were obstetrics and gynecologists, health surveyors, and professional organizations. The second group were family and society, including husband, mother, in-laws, and public figures. Many maternal death occurred in referral hospitals. There are three types of delay that often occur in Semarang, namely delay in decision-making, delay in accessing health services, and delay in acquiring health services.

Introduction

Reduction of Maternal Mortality Rate (AKI) is an important achievement in improving health development. Some of the efforts to reduce AKI were through various childbirth insurances (Helmizar, 2014). Various funding programs have been used such as Obstetric Insurance Program (Jampersal) and BPJS today. Unfortunately, Jampersal program has not been able to improve maternal mortality rate to an optimal level (Dinkes Kota Semarang, 2011).

AKI in Central Java province has not improved since the implementation of Jampersal in 2011. Instead, AKI increased to 116.01 per 100,000 live births. Furthermore,

in 2012 AKI reached 120.67 per 100,000 live births. Semarang had one of the highest AKI and the AKI tend to increase. Prior to Jampersal, AKI had been declining in Semarang (AKI in 2010 was 73.8 per 100.000 live births). After Jampersal implementation in 2011, AKI increased to 119.9 per 100,000 live births (Dinkes Kota Semarang, 2011). AKI has not fulfilled the national target until now; even in BPJS era was still high, about 109.2 per 100,000 live births.

The high AKI has forced the Health Office to implement various maternal death prevention programs. In Central Java, there is a program with the slogan of, “Jateng Gayeng Nginceng Marang Wong Meteng”. Some

✉ Correspondence Address:
Midwifery Program in STIKES Widya Husada Semarang
Email : dewisari.smg@gmail.com

programs such as health/childbirth insurance, development of Basic Obstetric Neonatal Emergency Service (PONED) in Community Health Center (Public Health Center) has been running; nevertheless those programs was ineffective in decreasing AKI.

Therefore, we need a qualitative study to assess this high AKI phenomenon. Grounded theory approach was used to find an applicable finding to decrease AKI significantly, especially in Semarang.

Method

We used grounded theory approach to formulate or discover a theory that correlates with high maternal mortality rate. This qualitative research could produce findings that cannot be attained by statistic procedures or Naturalistic methods.

The subjects consisted of obstetrics and gynecologists, Poned Public Health Center team, midwives, and Health Section of Semarang City Health Office. This study will focus on discovering: 1) actors involved in obstetric services, 2) investigate referral delays that contributes to maternal death in obstetric services in Semarang City, 3) delineate Public Health Center Poned's role in prevention of maternal death, 4) overview of obstetric services on various level of care in Semarang.

We used primary and secondary data sources. Primary data was obtained by subject interview and Focused Group Discussion (FGD) while secondary data was obtained by reviewing documents related to study focus such as maternal death and obstetrics records.

Inductive analysis was used as the basis to asses data obtained from grounded theory approach. This approach contains three interrelated basic elements namely concept, category, and proposition. To produce proposition, we used data analyzing procedures namely open coding phase, axial coding phase, and selective coding phase.

Results and Discussion

Based on FGD we found that some actors had a large contribution on prevention of maternal death. The actors can be divided into 2 groups, health worker and non-health worker. Health workers consisted of midwives who provide ANC and childbirth care, Poned Public Health Center team, obstetrics and

gynecologists, health surveyors (*Gasurkes*), and health profession organizations. Non-health workers consisted of family and community.

Midwives had an important role and is expected to be the spearhead in reducing AKI. Midwives, especially Private Practice Midwife (BPM), is an institution and actors in prevention of maternal death (Van Den Broek, 2011). From FGD, we found that most antenatal care (ANC) was conducted by BPM. Regular ANC, at least 4 times during pregnancy to health workers, can detect early any pregnancy complication such as preeclampsia, anemia, ectopic pregnancy (KEK), intrauterine infection, and antepartum bleeding, all of which contribute to maternal death.

At least four antenatal cares must be conducted during pregnancy, with at least once in first trimester (under 14 weeks gestation age), once in second trimester (between 14-28 weeks gestation age), and twice in third trimester (between 28-36 weeks and 36 weeks). The standard antenatal care consists of "5T" namely 1) *Timbang* (weigh), 2) *Tekanan darah* (blood pressure), 3) *Tinggi fundus uteri* (uterus fundal height), 4) *Tetanus imunisasi* (tetanus immunization), 5) *Tablet tambah darah* (anemia supplement tablet) 90 tablets during pregnancy (Ministry of Health Regulation Indonesia Republic Number 2562/MENKES/PER/XII/2011).

Basic Obstetric Neonatal Emergency Service (PONED) is a facility to manage obstetric and neonatal emergencies in pregnant, laboring, and post-partum women with life-threatening complications for both the mother and her fetus. PONED is one of government's efforts to reduce the high AKI and Baby Mortality Rate (AKB) in Indonesia compared to other ASEAN countries.

PONED Public Health Center is a community health center with inpatient care facility that is competent and have adequate 24-hours PONED facility for pregnant women, laboring women, and post-partum women, also neonates with complications who arrived by themselves or through cadre/community referral, village midwife, Public Health Center and also provide referral to PONEK Hospital for difficult cases. In FGD, we discovered that PONED Public Health Center is still ineffective

to reduce maternal death because they lack facilities and human resources specially trained for PONEB.

Obstetrics and gynecologist specialist is one of an important actor in prevention of maternal death. Prompt action of obstetrics and gynecology specialists will provide more opportunities to save maternal lives in childbirth (Isti, 2011). FGD result concluded that the majority of maternal death occurred in hospital (Anisa, 2011). One of the actor who was often blamed for maternal death is the delay of treatment by obstetrics and gynecologist specialists. Quick assessment by obstetrics and gynecologists can reduce maternal death. Action taken more than 120 minutes increase the risk of maternal death (Vitricya, 2012). Responsive action by obstetrics and gynecologist specialists is defined as action taken or examination by doctor in less than 5 minutes after patient arrived at IGD. Event response time in real-time system is defined as the time between an event (internal or external) until first instruction given were executed. The target is to reduce response time and number of delayed services in emergency care / emergency response time rate (Vitricya, 2012)

Emergency unit services is defined as late if life-saving treatment was given to emergency patients in more than 15 minutes. The tolerance limit of management in IGD (the duration between patient admission in IGD until transfer/outpatient/emergency operation) was 2 hours.

Other than slow response in emergency unit, we found that response time of obstetrics and gynecologist was affected by Bed Occupancy Ratio (BOR). BOR is one indicator to assess service efficiency. BOR can be used as indicator to count the number of beds in hospital occupied by patients and shows how much bed was occupied in one time; the ideal percentage is 60-85%. Government's effort in Jampersal, especially for patients referred to hospital, will face the problem of reduced BOR in delivery room. High BOR cause patient observation by obstetrics and gynecologist specialist ineffective, resulting in problem such as postpartum bleeding, eventually will impact quality of services (Vitricya, 2012).

Health surveyors (Gasurkes) recruited

by Health Office were aimed to improve health data management. Through FGD, it was found that Gasurkes played a role in first level and referral service system. Information from one obstetrics and gynecologist stated that Gasurkes helped to provide ANC and referral services. There was a case where Gasurkes helped a midwife to refer patient with severe preeclampsia. Unfortunately, instead of delivering the patient to Public Health Center, Gasurkes sent the patient directly to hospital and without any prior stabilization.

Gasurkes' role in supporting first level and referral services is a new phenomenon in maternal service system. Any procedural mistakes such as referral without any prior patient stabilization should be noted to improve future services. Gasurkes' role in maternal service was aiding health officers' task in providing first level and referral service. The main responsibility is held by each health officers according to their competence.

Professional organizations such as Indonesia Midwife Association (IBI) and Obstetrics and Gynecology Association Federation (POGI) are included as actors in preventing maternal death. These professional organizations aimed to improve their members' competency in order to reduce maternal death.

In FGD one of source from IBI stated that IBI vigorously trained their members who practice as BPM. During submission request of practice licenses, IBI evaluate and accompany BPM, and will deliver punishment in case of proven malpractice. IBI also inspect and request for any Midwife Practice License (SIPB) for any suspected illegal BPM reported by the community. In addition, IBI facilitated Public Health Center Chief and Public Health Center midwife coordinator. Information of a postpartum women discharged from hospital could be disseminated through a whatsapp group so the women can be accompanied by midwives.

Family members especially husband, mother, and mother in law are the closest actors to a pregnant mother who play an important role in reducing maternal death (Diaz, 2017; Elviera, 2016). FGD and in-depth interview on midwives revealed that family members played an important role in quick decision making.

Delay in deciding to refer patients to advanced care will increase risk of maternal death.

Study subjects provided some example of maternal death caused by delay in seeking medical attention because the family members waited for the arrival of husbands or parents. This situation was occasionally worsened by further delays after a decision to seek medical attention was made (Story, 2012). Such delay was usually caused by limited means of transportation and poor infrastructure. Poor geographic accessibility caused delay more than two hours, which is the maximum time allowed for delays to save laboring mother from vaginal bleeding.

Community also play an important role by caring and facilitating patients to access health facility. We discovered from FGD that maternal death mainly occurred in rural and poor communities caused by delay in accessing childbirth facilities. Poor infrastructure and lack of transportation can be a few contributing factors in maternal death.

Referral delay is still a risk factor of maternal death in Semarang City. Usually, maternal death in developing countries is caused by one of the three delays (The Three Delay Models) (Natalie, 2013). These three delays will worsen maternal condition by delaying appropriate treatment of the complications, leading to inevitable death.

The first delay is delay in decision-making. Interview revealed that in case of emergencies, decision-making still relied on "discussion" culture, resulting in decision-making delay. Husbands still play a role as the main decision-maker, hence, in case of complication, referral decision could be delayed by husband's absence. Cost is one of the reason of decision-making delay. When mothers from poor families must be referred, the family did not dare to send the mother to referral hospital. Even though the village chief could help in requesting government assistance, the family still felt burdened by other costs such as transportation to hospital and other drugs.

Delay also occurred due to lack of knowledge about danger signs that must be treated immediately to prevent maternal deaths. For example, in post-partum hemorrhage, the family did not understand how much bleeding

is considered as abnormal. In addition, the culture of resignation and thinking of morbidity and maternal death as fate still exists in the society, hence family members and society do not seek immediate emergency treatment.

The second delay is the delay of reaching referral healthcare facility after decision has been taken. This can occur due to difficulty in finding transportation, jammed road, and non-standard transportation. Generally, maternal deaths occur during and after childbirth, so this delay can be prevented by preparing emergency transportation early. The results show that most family members started to look for transportation after midwives advise that the mothers should be referred. Some mothers were taken to hospitals by public transportation, rental car, midwife's car, and transport truck, and only a few were transported by ambulance from primary health care. On the average, the distance to the referral site can be reached in less than 2 hours, but jammed road prolonged travel time and worsened the mother's condition.

The third delay in maternal deaths is delay in patient management at referral location. From the Focused Group Discussion (FGD), we obtained some information about the example of this third delay such as: shortage of blood supply so that the family had to look for blood elsewhere, which may cause the mother to die before the family arrived. Besides, it the mother often have to wait for several hours at referral health centers due to poor staff management, advance payment policy, or difficulty obtaining blood for transfusion, lack of equipment, essential drugs, and surgery room. Implementation of a good midwifery service system is based on the regionalization of perinatal services, where pregnant women can be operated in no more than one hour and the infant must be taken out as fast as possible. The result of this study is consistent with earlier studies which suggest that delay in patient increases the risk for maternal death (Hematram, 2012; Anisa, 2011).

Poned Public Health Center had a very strategic role in maternal mortality prevention. The high maternal mortality rate in referral hospitals showed that the role of *Poned Public Health Center* has not been optimal yet. In Semarang City, there are 6 *Poned Public Health*

Center, i.e. Menteng, Mangkang, Halmahera, Ngesrep, Bangetayu, and Ngaliyan Community Health Center. The discussion about the role of *Poned Public Health Center*, we obtained from interview with Poned team from *Poned Public Health Center* in Semarang City.

From interviews with Poned Public Health Center team, we found that there was a relationship between delivery room BOR at higher referral hospital and the usage of *Poned Public Health Center*. Chronologically, many private practice midwives referred their patients directly to Poned hospital rather than *Poned Public Health Center* although *Poned Public Health Center* was part of primary healthcare service for Jampersal. This led to an increased number of delivery room BOR, resulting in insufficient midwifery treatment room for all patients. The lack of available bed in the delivery room caused the patient to be referred to another referral hospital, and so on. This may eventually lead to delayed treatment many patients. Furthermore, the delay in patient treatment will be a major risk factor for maternal mortality the patient also have a complicated labor.

The following explanation can explain why Poned Public Health Center has not been maximally utilized to reduce the high number of delivery room BOR in referral hospitals. The study result showed that Poned Public Health Center already have a trained Poned team (1 doctor, 1 midwife, and 1 nurse), but they only had an experience on helping normal delivery. There were trained Poned officers (doctors) who were transferred to another place, while the substitute officer had not been trained for Poned. Besides that there were Poned Public Health Center that only can serve normal delivery. Labor assistance at Poned Public Health Center almost always performed by the midwives; doctors rarely handle delivery because they were not available 24 hours on site.

That explanation shows some aspects that need attention. Jampersal program services must be improved at all levels to reduce maternal mortality. In the future, any form of delivery insurance program should be able to draw lessons from the shortcomings of similar programs in the past.

The findings from various levels of delivery services indicate some deviations from standard healthcare procedures. FGD and interview on obstetricians, midwives, Poned PHC teams, and Family Health section of Semarang City Health Office provide an information about the condition of delivery service at various levels, namely primary delivery service, referral preparation service, and advanced services.

Primary delivery services are services provided by competent doctors or midwives and are authorized to provide services such as antenatal examination, delivery assistance, postpartum care and postpartum family planning services, as well as newborn healthcare services, including preparatory service when complications (pregnancy, childbirth, postpartum and newborn and post-partum KB) occurs in primary healthcare center. The types of delivery insurance services at the first level included ANC services, early detection of risk factors, normal delivery assistance, delivery care for Poned Public Health Center, postnatal care (PNC), and postpartum care services.

Referral preparation service is a service for conditions that cannot be managed completely at primary healthcare facility so that referral to higher healthcare facility is needed. This service can be provided for cases that cannot be managed completely due to limited human resources, medical equipment and medicines. In addition, by referring the patient to higher health facility, the patient will receive better and safer services at the referral healthcare facility. In practice, when this service is provided to the patient, they must be in stable condition during the referral process until managed at more advanced facility.

Advanced services are services provided by specialist health workers for midwifery and newborn services to pregnant women, laboring women, post-partum women, and newborns at high risk and/or with complications that cannot be treated at primary healthcare facilities based on medical indications. The types of delivery services provided at advanced levels included ANC treatment, assistance of delivery with high risk factors and complications, treatment of obstetric complications, postnatal examination

(PNC), and postpartum care.

The results of this study indicated that there was a lack of compliance to the procedures for primary labor services. FGD results showed that there was a problem related to the primary health service, no blood pressure examination by midwives during ANC visit, there were patients who did not have *KIA* books, and *KIA* books were not filled completely. We found an information that in one of the maternal mortality case, the patient was found to have high blood pressure (140/80 mmHg) in the first and sixth ANC visits, however there was no appropriate intervention at that time. In another case, we found that at the seventh ANC visits, the patient had elevated blood pressure (140/90 mmHg) followed by swollen feet but the patient was not immediately referred to hospital. This situation lead to further referral delays to higher healthcare facilities in providing the necessary treatment.

PONED Public Health Center as part of the primary health service were often not utilized optimally. FGD result revealed a statement from the midwives that PONED Public Health Center service at night were only performed by the midwives, because the doctor on duty was not available on the site. In addition, a trained doctor who was responsible for Poned Public Health Center was transferred and the substitute doctor has not been trained. FGD also give us information that most patients served by Poned Public Health Center were patients who had their ANC visits in the Public Health Center. It was rare to find patients from private practice midwives who were referred to Poned Public Health Center.

We also found a weakness in referral preparation service based on FGD results. The following are some examples of problems in referral preparation services. Firstly, there were delays on referral because the family took a long time to decide, hence the patient had to wait for a long time at the primary healthcare center. An example of the obtained from FGD, there was a patient with severe preeclampsia. The husband worked out of town, while her parents were too old and sick. Although midwives advised the patient to be referred, the patients was not immediately taken to the hospital because there was no one to wait on her at the hospital. In

this case, the patient subsequently experienced seizure and was taken to the referral hospital by her neighbors, but then she died because of severe preeclampsia.

In some cases there was no adequate informed choice to patients and her families. Absence of adequate information about patient's condition and the necessity of referral to hospital caused the family members to not feel rushed in deciding on referral. In one of the mortality case, we found that the midwives did accompany the referred patient with bleeding and did not set any intravenous line during referral.

The second problems were related to Jampersal service in referral labor service. For example there was a hospital that received a patient with late referral. In the FGD, we found a midwife who said that sometimes when she called the referral hospital by telephone, she was always received answer that the hospital was full. If some of the patient's referral hospitals were full, this would delay patient's arrival at the referral hospital

The high delivery room BOR at referral hospitals is a problem in advanced services (Asamoah, 2011). In the FGD, we obtained an information on several factors that trigger high BOR, one of them is related to misdiagnosis of VT by midwives. There was a case where the midwife had started leading the delivery but then diagnosed the patient with prolonged labor since the baby has not been delivered. When the patient was referred to the hospital and reexamined by VT, the vaginal effacement was still incomplete. If this occurred in many patients, it will certainly have an impact on the increase in delivery room BOR in referral hospital.

The high BOR might also be caused by low utilization of PONED Public Health Center. Private practice midwives rarely referred their patients to PONED Public Health Center. Private midwives prefer to refer patients directly to the hospital because of the more complete facilities. The high BOR further reduce available rooms for an obstetric case. Another consequence of high BOR is the long days of treatment which could lead to poor quality of postpartum care (PNC). Hospitals often receive referral patients with very little

medical information. FGD results showed the presence of a referral patient without KIA book or with incomplete data.

Conclusions

Based on the result of this study, it can be concluded that the actors who play a role in maternal death prevention can be grouped into 2, namely health workers group and non-health workers group. Actors in the health worker group are midwives / Private Practice Midwives; Poned Public Health Center team; obstetrician and gynecologist; health survey personnel (gasurkes), and professional health organizations. The actors in the non-health workers group were family and community.

The second conclusion is that there were still three delay models, such as: delays on decision to be referred, delay in reaching the referral site, and delay on obtaining medical attention at the referral site in Semarang City.

The third is a need to improve the role of Poned Public Health Center in prevention of maternal death in Semarang City. High delivery room BOR in the referral hospital is one of indicator that Poned has not been utilized optimally. Furthermore, high BOR will decrease the response time of the obstetrician in providing treatment. Ultimately, the situation may increase the risk of maternal death.

The fourth conclusion is that there were deviations in delivery service procedures at all levels of service, such as primary healthcare service, referral preparation service, and referral service.

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