Integration of the Maternal Death Prevention Program based on the Health Belief Model Framework

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Abstract

In 2015, the Health Office of Banyumas Regency records 7 cases of maternal deaths, 243 cases of infant deaths, and 41 cases of under-five deaths. Compared to 2015, maternal mortality increases in the first three months of 2016. This research aims to identify the causes of maternal deaths that occur in 2016 in Banyumas Regency using the Health Belief Model conceptual framework. The results show that the cause of maternal death in Banyumas Regency is the lack of antenatal services due to the lack of knowledge and awareness of mothers, social status of women in the community, availability of health facilities, vulnerabilities received, benefits of antenatal services, barriers to access to health services, and quality of health facilities and health workers. The problem solving plan is based on the HBM concept framework that can be prepared consisting of stakeholder advocacy, health promotion programs through counseling for pregnant women, programs to improve access to health facilities, and intervention programs for health workers.

Introduction

The high maternal mortality rate (MMR) in an area is capable of representing a low degree of public health and has the potential for economic and social setbacks from the household, community to national arrangements. Globally, an estimated 358,000 maternal deaths occur each year. 99% of them occur in developing countries, including in Indonesia. A decrease in MMR in Indonesia from 390 in 1991 to 305 maternal deaths per 100,000 live births in 2015 (Indonesian Ministry of Health, 2018). In Banyumas Regency, maternal and child mortality (toddlers) is still a common health problem. The Health Office of Banyumas Regency recorded 75 cases of maternal and toddler deaths based on reports up to March 2016 with details that there were 8 cases of maternal death, 50 cases of infant mortality aged 0-12 months, and 17 cases of infant mortality under the age of 1 - 5 years.

In 2015, the Health Office recorded 7 cases of maternal deaths, 243 cases of infant deaths, and 41 cases of under-five deaths. Compared to 2015, infant and toddler mortality cases have decreased but maternal mortality has increased in the first three months of 2016. Despite the declining maternal mortality rate at the end of the year, Banyumas Regency still ranks 7th out of 35 districts in Central Java with a number high maternal mortality.

Various attempts have been made to reduce the maternal mortality rate. The Indonesian Ministry of Health organizes the Making Pregnancy Safer (MPS) through the Jampersal program to ensure that deliveries are performed in health facilities and by health workers. The State Ministry for Women’s Empowerment also launched the Mother’s Love Movement (MLM) as an effort to foster awareness and responsibility of families and communities in paying attention to pregnancy
and birth which poses risks for mothers and babies (Gemari, 2009). The Health Office of Banyumas Regency also organizes programs to reduce maternal mortality through the intervention of the EMAS Program (Expanding Maternal and Neonatal Survival) which is then carried out in several working groups such as emergency work groups, referral work groups, IT working groups, community empowerment work groups. The implementation of this working group is regulated in the Banyumas Regent Decree so that the activities carried out in the working group receive legal protection and full support from regional leaders.

The incidence of maternal death is related to the behavior of seeking out maternal health facilities during pregnancy, childbirth, and breastfeeding. Research conducted by Rahmayani et al (2016) shows that low knowledge and beliefs cause pregnant women not to seek treatment at a health facility (Rahmayani, Bahar and Nirmala, 2016). This study uses the Health Belief Model theory to determine the behavior of pregnant women that can trigger maternal deaths in Banyumas Regency. Health Belief Model (HBM) is a theory that is often used to predict why someone tends to take precautions or control their health conditions. The Health Belief Model consists of the main concepts of perceived vulnerability, severity, benefits and obstacles in behavior, cues in action, and self-efficacy. Nevertheless, the Health Belief Model theory can explain one’s perceptions and attitudes towards health problems and the negative results of certain actions. There is potential ambiguity that can occur in the application of this HBM theory (Yoshitake et al., 2019). Research conducted by Mutanda and Odigmewu (2017) shows that the practice of seeking treatment in pregnant women in three critical stages of labor has the potential to reduce under-five mortality. The planned public health program should focus on the influence of treatment seeking behavior among women and remove barriers to effective maternal health seeking behavior (Chadoka-Mutanda and Odimegwu, 2017).

During this time, various focus of Health Belief Model research answers how a person’s behavior in seeking treatment and what are the causes. Whereas the problem solving recommendations are carried out separately in each component of the concept. However, there has been no attempt to combine recommendations for solving the problem that need to be done to overcome the causes of health problems with the cause of someone to take action / behavior in HBM theory. This study aims to identify the causes of maternal deaths that occurred in 2016 in Banyumas Regency using the framework of the concept of health belief models to predict trends in maternal behavior during pregnancy. From the conceptual framework, it can be compiled about the design of problem solving using the same conceptual framework.

Method

This research is a case study research using a qualitative approach. Yin (2014) mentions case study research as an empirical investigation that examines contemporary phenomena or cases in depth in real world contexts (Hollweck, 2016). The research involved the role of the District Health Office and health facilities. So the case study in this study is presented with a single case study design embedded because it includes more than one unit of analysis. Simpson et al (2016) research involves service users, service providers, and recovery service coordinators as a research analysis unit to find out mental health care planning that focuses on recovery and coordination (Simpson et al., 2016). Research conducted by Ogbuabor et al (2018) uses a case study method to assess the influence of the context and capacity of health facility institutions in Nigeria and find that this method can assess the effectiveness of free maternal and child health programs (Ogbuabor and Onwujekwe, 2018) South-east Nigeria.

METHODS: We conducted a qualitative case study at the state level and in two health districts (Isi-Uzo and Enugu Metropolis).

The study was conducted in the Banyumas Regency. The primary data used in the analysis of this study was the result of in-depth interviews with the Health Office of Banyumas Regency, the Public Health Center (Puskesmas), and hospitals in the Banyumas Regency working area. Primary data collection was carried out in January 2017. Key informants in this study consisted of five people including the head of the mother and
child health section (KIA) of the Health Office of Banyumas Regency, the doctor of public health center, the obstetrician and medical specialists in the hospital. Interviews with key informants were conducted to answer research questions such as the causes of maternal deaths in Banyumas District, the behavior of pregnant women in seeking health services, as well as the government’s efforts to reduce maternal mortality. The results of the interviews were then analyzed using a descriptive approach through the process of data reduction, data presentation, and drawing conclusions that are expected to answer research questions. Whereas the secondary data used is in the form of district health report documents compiled in the Health Profile of Banyumas Regency. The data in this document is used to see trends in maternal mortality in Banyumas Regency.

**Result and Discussion**

Based on the results of interviews conducted with the head of the section of maternal and child health (KIA) of the Health Office of Banyumas Regency, it can be seen that even though the maternal mortality rate at the end of the year has decreased. Banyumas Regency still ranks 7th out of 35 regencies in Central Java with high maternal mortality rates.

“The maternal mortality rate (MMR) is still high in Banyumas Regency and has not been achieved because in Central Java there are 35 Regencies with 7th rank out of 35 districts. So it is considered high. But if you say that the MMR is high, we must look at the ratio of the population. Our population is more than the population in other Regencies, for example, Purbalingga and Banyumas Regency.” (R1)

“If it’s still high, that’s true, and if calculated from Central Java, we will rank 7th. This year, 87 per 100,000 live births, this ratio has decreased. But in 2016, all MMR cases in 35 districts began to drop. So we are indeed in the top 10 in Central Java because in 2016 all of other regencies dropped.” (R1)

Based on the results of interviews and document studies, there are several things that cause inadequate antenatal care. **First**, the low level of knowledge and lack of awareness

![Figure 1. HBM Conceptual Framework for Causes of Maternal Death in Banyumas District](image)

Figure 1. HBM Conceptual Framework for Causes of Maternal Death in Banyumas District
of pregnant women about the importance of routine checks during pregnancy. This was stated by respondents in the following statement:

“... education will lack knowledge of the importance of ANC, PNC, and consultation to midwives ..” (R2)

This is in line with research conducted by Haque, et al. (2016) which shows the number of first trimester antenatal service visits is still low due to the low level of maternal knowledge and lack of maternal awareness of the condition of pregnancy (Haque, Dash and Chowdhury, 2016). Other studies conducted by Esscher, et al. (2014) showed that 2/3 of deaths of foreign nationals in Sweden were caused by suboptimal maternal health service factors (Esscher et al., 2014). Communication constraints, knowledge about rare diseases, and complications of pregnancy make pregnant women reluctant to check the pregnancy so that the condition of pregnant women is less attention. In line with the research of Mahmudah et al (2011) which also shows that maternal education and knowledge factors are positively related to the incidence of perinatal mortality in Batang Regency (Mahmudah, Cahyati and Wahyuningsih, 2011).

Increased knowledge of pregnant women can be done through health promotion programs. The program is in the form of counseling to pregnant women regarding the importance of antenatal care and the benefits derived from antenatal care as a medium and learning tool to increase the knowledge and understanding of pregnant women about antenatal care (Haque, Dash and Chowdhury, 2016). Health promotion programs in the form of health checks also need to be done to detect early abnormalities during pregnancy. In Banyumas Regency, many extension programs have been carried out both in health facilities and at posyandu. This was stated by the respondent in the following statement:

“Many programs have been carried out, such as 1. Examination of pregnant women, 2. Recording of pregnant women and home visits, 3. Classes of pregnant women, including gymnastics activities for pregnant women and education, 4. Shelter home for pregnant women” (R2).

Second, social status of women who are still considered not to have an important role in the family or gender inequality. The socio-cultural role that tends to be unfavorable for a woman in the household causes her to be unable to provide decisions for herself, including the decision to check for pregnancy.

The Health Service of Banyumas Regency also revealed that the main causes of death in children were LBW, asphyxia (babies do not cry at birth), and congenital abnormalities. Meanwhile, the main causes of maternal death during childbirth are due to bleeding, hypertension, heart disease, and tuberculosis (Dinas Kesehatan Kabupaten Banyumas, 2017). In addition to these causes, pregnancy poisoning is still ranked second as the cause of death of pregnant women and childbirth in Indonesia. Obstetrics and gynecology specialist hospitals in Banyumas Regency said that pregnant women with preeclampsia and eclampsia were still late. The delay in handling pregnant women with preeclampsia and eclampsia is caused by several factors including a lack of understanding and alertness of pregnant women and families to the dangers and signs of symptoms of eclampsia and preeclampsia (Dinas Kesehatan Kabupaten Banyumas, 2017).

“The case was late being taken to hospital because of these factors because pregnant women do not really understand the dangers of eclampsia and the lack of vigilance of pregnant women and families in recognizing the signs and symptoms of preeclampsia and eclampsia. In fact, cases of eclampsia are very dangerous for pregnant women and their fetuses “(R5)

In various rural areas in developing countries, inequality of roles between men and women is still prevalent. This is consistent with research conducted by Lowe, et al. (2016) which shows that socio-cultural factors that influence maternal health are very diverse and interrelated, including pregnant women who do heavy work, the division of work in the
household, the disadvantageous position of women, and limited access and utilization of health services. The results of research Qureshi, et al. (2016) showed that husband and mother-in-law played a major role in making decisions to get health services. This shows that the role of pregnant women in the family is still not considered the same (Qureshi et al., 2016). The statement is in line with research conducted by Lowe et al., (2016) which states that socio-cultural factors that influence the health of pregnant women in rural areas of Gambia are the inequality of roles between men and women or gender inequality (Lowe et al., 2016).

The benefits of antenatal care are not comparable with perceived obstacles. Husband and family support for pregnant women to do antenatal care since the first trimester is very important so that mothers do not feel alone in undergoing pregnancy. In line with the study of Qureshi, et al. (2016) which states that one of the causes of delay in handling pregnancy with complications is the decision to get health services in the hands of husband or mother-in-law. When the husband or mother-in-law is not at home, pregnant women will not be allowed to go to health services. In addition to the support of her husband and family, the economic condition of the family also has a major influence on obtaining health services (Qureshi et al., 2016). Research conducted by Mustafa and Mukhtar (2015) in Sudan shows that there is a relationship between antenatal care visits and choice of place of birth with household economic status. Women with a high wealth index tend to be more able to pay for health care costs compared to women who have a low wealth index (Mustafa and Mukhtar, 2015).

Socio-cultural factors and gender inequality can be overcome by advocating to stakeholders or decision makers to make policies that can support the rescue program for pregnant women and children. This advocacy agenda involves local governments, cross-sectors, and the community to raise awareness of the role of families and communities in the importance of maternal safety and health.

“We also made efforts, such as advocating to the district head for rescue efforts. First, we budgeted a budget for rescue ...” (R1)

Tsigas (2017) in his research shows that advocacy has a critical role in the maternal health agenda. Advocacy here aims to improve the diagnosis, management and prevention of pre-eclampsia through research and developing health care practices (Tsigas, 2017).

**Third**, the availability of health facilities and access to health services. This is in line with the results of the following interview respondents:

“If MMR is still high, the cause is, firstly, access to residential areas that are too far from more adequate health facilities, difficult terrain. From socio-economics: the cost is getting more expensive so that there are still many who use shamans during childbirth, get married at an early age.” (R2)

In addition, the location of access to health services that are less affordable is the cause of delay in handling pregnant women with eclampsia (RSUD Banyumas, 2015).

“Well, if it’s difficult to transport, they will just find a shaman. Besides, using a shaman will be cheaper, right? just give cassava or banana for the shaman’s expenses ...” (R2)

Atuoye et al., (2015) in his study stated that limited transportation and road infrastructure development that continues to be ignored makes it difficult for mothers and children to get access to health services. Things like this are very common in developing countries with extreme geographical conditions. The limited number of health facilities and the distance to health facilities that are quite far are also a challenge for pregnant women when performing antenatal services (Atuoye et al., 2015).
Research by Larsen, et al. (2016) showed that pregnant women who live close to health care facilities are twice as likely to do antenatal care compared to pregnant women who live far from health facilities. The existence of first-rate health facilities in rural areas can make a major contribution to reducing maternal and infant mortality (Larsen et al., 2016). Research Memirie, et al. (2016) showed that the utilization of first-level health facilities can reduce the disparity in utilization of maternal health services (Memirie et al., 2016).

A program to improve access to health facilities and the provision of adequate health facilities in rural areas needs to be carried out to bring communities closer to health facilities so that their utilization can be increased. Research conducted by Atuoye, et al. (2015) states that the construction of road infrastructure will facilitate community access to health services. During this time, not all pregnant women feel the benefits gained when doing antenatal services. In fact, if pregnant women understand and understand the benefits of antenatal care, risk factors for maternal and infant mortality can be suppressed as early as possible (Atuoye et al., 2015).

Fourth, the perceived vulnerability and severity that can be found to be one of the triggers for someone to take an action. In this case, the new pregnant woman will check her health to a health care facility after she feels a headache or bleeding during pregnancy. Qureshi, et al. (2016) in his study showed that in Pakistan pregnant women usually conduct health checks to health care facilities if they feel signs of danger of pregnancy complications, such as heavy bleeding or headaches. The reluctance of pregnant women to conduct health checks is due to the inadequate quality of health facilities and the attitudes and skills of health workers. The quality of health services is lacking and the ability of human resources to handle births is still less skilled, both in primary services and in government hospitals. This is also the reason pregnant women do not check for pregnancy (Qureshi et al., 2016).

... Second, health human resources are still few in remote areas ...” (R2)

“... In addition, the ability of primary service human resources for handling births is still less skilled as well.” (R4)

In emergency cases, private health facilities are often the first choice for families who can afford to pay for health services there. Private health facilities were chosen because of the greater availability of doctors, timely services, and types of health services available. The number of women health service providers is also higher so that they are more accepted in handling pregnancy and postpartum. Meanwhile, families with limited economic conditions are forced to use public facilities, where the quality of services is much lower (Qureshi, et al. 2016). Research conducted by Roberts et al., (2015) shows that the attitude of health care providers influences clinical antenatal visits. By developing patient relationships and health care providers, it can reduce maternal complication during pregnancy (Roberts et al., 2015).

An intervention program to improve the quality of antenatal care and the attitudes and skills of antenatal care officers is needed to overcome obstacles in terms of resources and service quality. Research conducted by Mannava, et al. (2015) showed that the attitudes and behavior of providers in providing health services affect the welfare, satisfaction and behavior of seeking health services for patients (Mannava et al., 2015). So far, there are no standard parameters for measuring the quality of antenatal care, so it is difficult to know whether adequate antenatal care is provided to pregnant women. Therefore, a service quality measurement standard program is needed to find out whether the quality of antenatal care services is in accordance with established standards.

This effort has been carried out in Banyumas Regency through clinical governance and referral efforts at primary and advanced health facilities.

“... we make clinical governance efforts and referrals that exist in health centers and hospitals. This clinical governance has many items that we use, it is for the competence of health workers. Here, we have to look at all health workers related to
saving mothers, for example doctors, nurses, and midwives. They must be integrated for their services so they do not work individually. Then, there is also clinical governance in the form of clinical performance monitoring tools and referral performance monitoring tools ... “(R2).

At present the National Health Insurance (JKN) program in the form of Social Insurance Administration Organization (BPJS) has been implemented to overcome the problem of financing health facilities. However, the reality on the ground shows that there are still many obstacles that require great attention from the government. So that the role of the government as policy makers and decision makers is needed in strengthening the national health insurance policy system to help the community ease the burden of health service financing. Based on research conducted by Akeju, et al (2016), the cost of health services is still difficult to reach by the community so that it is necessary to innovate a health financing mechanism that may be more beneficial for women to reduce the burden of health care costs (Akeju et al., 2016).

Maternal and child health problems are no longer a stranger in the health sector because the mortality rates of mothers and children (infants and toddlers) still occur even though the graph tends to change every year. Various programs and policies have been designed and implemented to reduce maternal and child mortality. Figure 2 shows the draft settlement that can be done to increase the coverage of antenatal services to reduce maternal mortality compiled based on an analysis of causes of maternal death using the Health Belief Model conceptual framework.

The government has a big role to play in saving mothers and babies. An increase in the legal umbrella of childbirth assurance policies is needed to bind the relevant policy actors in the district / city area (Helmizar, 2014). Collaboration between stakeholders and related parties is needed so that the problem solving plan can be implemented and continuously carried out in the program to reduce maternal mortality in Banyumas Regency.

This research has several weaknesses. An intervention program in research has been carried out. However, further research is still needed to find out the results of the implementation of the overall intervention whether it can reduce maternal mortality

Figure 2. Draft of Maternal Mortality Problems in Banyumas Regency
significantly and how the sustainability of this intervention is carried out. Further research is also needed to find out the extent of local government involvement in supporting efforts to prevent maternal deaths using program interventions.

**Conclusion**

The results showed that the causes of maternal mortality in Banyumas Regency included a lack of antenatal care due to low maternal knowledge, difficulty in accessing health facilities, imbalanced roles of women in making decisions in the household, and the quality of services and health workers were less than optimal. To overcome these causes, programs and policies that can be compiled include advocacy with relevant stakeholders, health education programs for pregnant women related to the importance of antenatal health care during pregnancy, programs to improve maternal knowledge, difficulty in accessing health facilities, imbalanced roles of women in making decisions in the household, and the implementation of intervention programs to improve the quality of antenatal care, and the attitudes and behavior of health providers.

**Reference**


