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Study of Risk Factors for Complications and Maternal Mortality in Magetan Regency

Suparji[1(corresponding author)], Sulikah[2]
[1]Department of Midwifery, Poltekkes Kemenkes Surabaya, Indonesia; suparjibrisa@yahoo.co.id
[2] Department of Midwifery, Poltekkes Kemenkes Surabaya, Indonesia; ikah_sulikah@yahoo.co.id

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ABSTRACT

Maternal mortality, which is the death of a woman during pregnancy, childbirth, or in 42 days during childbirth, accounts for around 830 deaths every day worldwide. Maternal Mortality Rate (MMR) in Indonesia is still quite high, the rate jumped significantly from the previous year which was around 307 per 100,000 live births (SDKI 2002/2003), to 359 per 100,000 live births MMR of East Java Province reached 91.00 per 100,000 live births. This figure has increased compared to 2015 which reached 89.6 per 100,000 live births. This type of research was observational with the case control approach, a case population of 13 dead mothers, a sample of all cases, and the sample size of control was 2 times case (26 mothers), selected using simple random sampling technique. The independent variable of this research was nutritional status, maternal health, reproductive status, healthy behavior, while the dependent variable were complications and maternal mortality. The instrument of data collection were documentation studies and interviews. The data analysis technique were descriptive analysis, Chi square test, and PLS. The nutritional status, health status and reproductive status affected the incidence of complications both pregnancy, childbirth and after childbirth, but do not directly affected the maternal mortality. Complications as a close factor influenced the incidence of maternal mortality both during pregnancy, childbirth and after childbirth. It is recommended to increase public education about risk factors,symptoms and signs of complications, and efforts to prevent death events maternal.
Keywords: maternal mortality; risk factors; complications; case control

INTRODUCTION

Background

Maternal mortality, which is the death of a woman during pregnancy, childbirth, or in 42 days during childbirth, accounts for around 830 deaths every day worldwide(1). The maternal mortality rate is unevenly distributed geographically with striking differences between developing countries, developing countries and developed countries(2). This is an indicator for women's health status and women's inequality(2), and also reflects the development of a country with respect to its health care system(3).

Maternal Mortality Rate (MMR) in Indonesia is still quite high, the rate jumped significantly from the previous year which was around 307 per 100,000 live births(4), to 359 per 100,000 live births.(5) Maternal Mortality Rate in East Java tends to decrease in the last three years, but in 2016 it increased again. According to Supas in 2016, the target for MMR is 305 per 100,000 live births. In 2016, the MMR of East Java Province reached 91.00 per 100,000 live births(6). This figure has increased compared to 2015 which reached 89.6 per 100,000 live births(6). Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) in Magetan Regency during the last 5 years has decreased, namely in 2014 the MMR was 113.79 / 100,000 live births and the MMR in 2015 amounted to 59.8 / 100,000 live births but in 2016 the MMR increased by 106.55 / 100.000 live births but in 2017 the MMR decreased by 97.57/100.000 live births (7).

Goal

This study aims to determine the risk factors that influence the incidence of complications and maternal mortality, which consists of close determinants, intermediate determinants and far determinants.

Hypothesis

The hypothesis in this study is the risk factors consisting of nutritional status, health status, reproductive status and health behavior directly or indirectly affect the incidence of complications and maternal mortality.

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METHODS

This type of research was observational analytic, with a case control design. The population of this study was 13 maternal deaths, and all of them were involved as case. The sample size of control was 2 times of cases (26 mothers), selected using simple random sampling technique. The independent variables were the study of nutritional status, health status, reproductive status and healthy behavior. The dependent variable were complications and maternal mortality. Data collection using questionnaires and verbal autopsy documents, MCH-book of pregnant women, medical records of labor, registers cohort of pregnant women and maternal mortality records. The data analysis technique were descriptive analysis, Chi square test, and PLS.

RESULTS

Validity and Reliability Test

Table 1. Outer model (weights of loading)

Variable		Outer loading	Information
Nutritional status	Anemia	0.803	Valid
	KEK (chronic energy deficiency)	0.897	Valid
Health status	Infectious disease	0.420	Not valid
	Pathological history	0.852	Valid
	Childbirth / pathological history	0.576	Valid
Healthy Behavior Status	Family planning	0.754	Valid
	ANC	0.475	Not valid
Reproductive Status	Parity	0.449	Not valid
	Child spacing	0.449	Not valid
	Marital history	0.244	Not valid
Complications	Complications	1.000	Valid
Maternal death	Maternal death	1.000	Valid

Table 1 shows that all indicators had a factor loading value >0.6000 so that it became a valid indicator for each construct; except infectious diseases, ANC, child spacing and marital history. Thus, it can be interpreted that infectious disease, ANC, child spacing and marital history might be excluded from the model.

Table 2. Convergent validity test results

Variable		Outer loading	Information
Nutritional status	Anemia	0.803	Valid
	KEK (chronic energy deficiency)	0.897	Valid
Health status	Infectious disease	0.852	Valid
	Childbirth / pathological history	0.576	Valid
Healthy behavior status	Family planning	0.754	Valid
Complications	Complications	1.000	Valid
Maternal death	Maternal death	1.000	Valid

Table 3. Composite reliability and Cronbach test results

Variable	Composite Reliability	AVE	Information
Nutritional status	0.857	0.749	Reliable
Health status	0.719	0.563	Reliable
Reproductive Status	1.000	1.000	Reliable
Complications	1.000	1.000	Reliable
Maternal death	1.000	1.000	Reliable

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Path Analysis Results

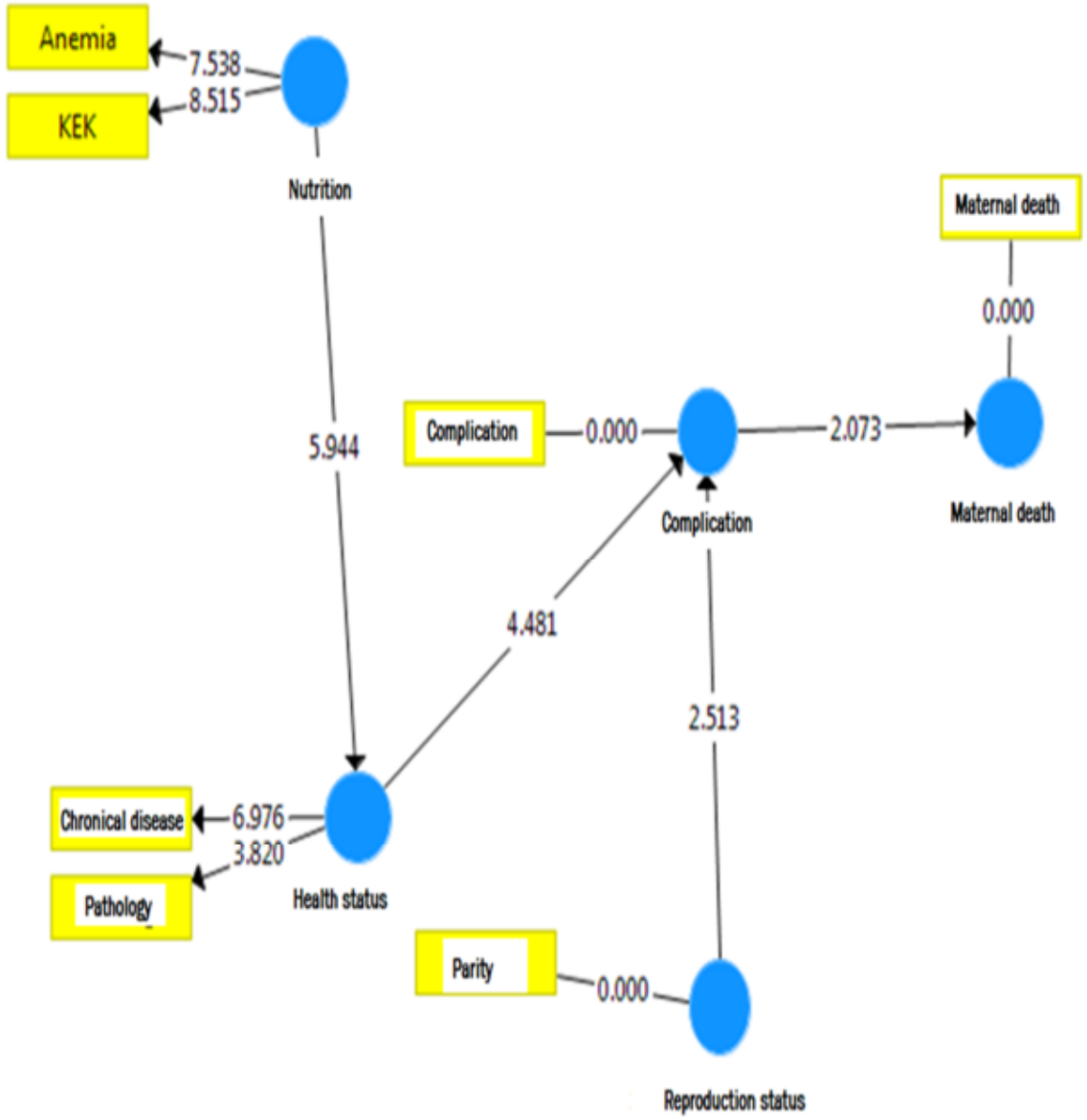

Figure 1. The final model

Based on, the results of the structural model analysis or inner model (Figure 1), nutritional status significantly influenced the health status with a p-value of 0.000; health status significantly influenced the complications with p-value of 0.000; reproductive status significantly influenced the complication with p-value of 0.016 <0.05; and complication significantly influenced the maternal mortality with p-value of 0.045

DISCUSSION

The results of research on risk factors for nutritional status indicate that nutritional status impacts pregnancy complications, childbirth and the puerperium. The same research results[8] mention the nutritional status of the condition of anemia can cause complications of pregnancy, childbirth and childbirth which can indirectly cause maternal death. Still according to[8] anemia can worsen the health status of the mother during pregnancy[9].

Health status in this study directly influence the incidence of complications and indirect effect on the incedence of maternal death. The same finding[2],[10] mentions complications (pregnancy, childbirth, after childbirth) closely related to a history of malaria, HIV / AIDS, cardiovascular disease. Meanwhile, according to[11] mentioned health status is a determinant between factors causing maternal death, namely malaria, obesity, infectious diseases, DM) this can cause pregnancy status[10],[12].

Reproductive status in this study directly affected the incidence of complications of pregnancy, childbirth and childbirth. It also indirectly influences the occurrence of maternal death. According to[9] that the reproductive status of parity affects the maternal death. This is explained that mothers with more frequent childbirth events will affect the health status of the mother, which indirectly also risks causing maternal death during pregnancy, childbirth or after childbirth.

Complications in this study directly caused maternal death during pregnancy, childbirth and the puerperium. Pregnancy complications can occur in women with a history of high-risk mothers.[8],[12] Mothers with this history can cause maternal death during pregnancy, childbirth and the puerperium.[9],[12] Mothers with complications have a risk of maternal death by 0.009 times compared with mothers without complications[3].

CONCLUSION

Risk factors which can jointly cause maternal complications are nutritional status, health status and reproductive health history. Risk factors that can cause maternal death directly are the occurrence of maternal complications. While the risk factors for nutrition, status of health and reproductive health history are indirect causes of maternal death.

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