

# The Effect of Continuity of Care on High-Risk Pregnancy in Kudus: An Observational Study

Islami, M.Keb

*Midwifery Study Program  
Muhammadiyah University of Kudus  
Kudus, Indonesia  
islami@umkudus.ac.id*

Diah Andriani Kusumastuti, M.Keb

*Midwifery Study Program  
Muhammadiyah University of Kudus  
Kudus, Indonesia  
diahandriani@umkudus.ac.id*

Darningsih, M.H.Kes

*Midwifery Study Program  
Akbid NU Kudus  
Kudus, Indonesia  
darningsih@gmail.com*

**Abstract** — High-risk pregnancy requires proper pregnancy care which focuses on the needs of pregnant women and minimizes the worst condition. Through early high-risk detection, midwives can provide appropriate midwifery care to pregnant women. The continuity of care is a philosophy of midwifery care that promotes continuous midwifery care from pregnancy to puerperium which aims to save the pregnancy at risk. Therefore, the pregnancy can be managed properly until the period of childbirth and puerperium. The aim of this study is to evaluate the effect of continuity of care for high birth rates. This study used observational studies. The samples were 46 risk pregnant women at Public Health Center of Kaliwungu, Kudus chosen through purposive sampling technique. Further, mentoring by midwives/continuity of care from the second trimester to the postpartum period was conducted. Pregnant women were, later on, managed and assessed every time there were physical changes both regarding deteriorating conditions and improving conditions. The data analysis was done using chi-square test by observing the babies born after the COC program was conducted. The results of this study reveal that pregnant women with risks who get mentoring/COC have a different tendency on the babies born, with on p value of 0.000. There is a significance effect of COC on high-risk pregnant women in the way that they have a tendency to give birth to babies under normal conditions.

**Keywords:** pregnancy, midwife, high risk

## I. INTRODUCTION

High-risk pregnancy is one of complicated pregnancies that lead to maternal mortality. Indonesia is a developing country with more cases of maternal mortality compared to other countries. Now, the maternal mortality rate is 305/100.000 birth per year. The government of Indonesia provides JKN (*Jaminan Kesehatan Nasional*, a national insurance for health) for all pregnant women. By using JKN, pregnant women receive service of antenatal care, intra-natal care and postnatal care. The aim of antenatal care service is to improve the mom and the baby's health and to detect complications during pregnancy. During pregnancy, midwives check the pregnancy and conduct laboratory test such as hemoglobin, hepatitis test, protein urine test and glucose test. High-risk pregnancy involves such as

hypertension, diabetes mellitus, hepatitis, hyperemesis gravidarum, placental abruption, placenta previa, and eclampsia.

High-risk pregnancy requires proper pregnancy care which focuses on the needs of pregnant women and minimizes the worst condition. Through early high-risk detection, midwives can provide appropriate midwifery care to pregnant women. The continuity of care is a philosophy of midwifery care that promotes continuous midwifery care from pregnancy to puerperium which aims to save the pregnancy at risk. Therefore, the pregnancy can be managed properly until the period of childbirth and puerperium.

Continuity of care is the philosophy of midwifery service. Continuity of care increases the sense of responsibility of health professionals to reduce additional services and the risk of re-admission to hospital. The services are provided during prenatal, intra-natal and postnatal phase to minimize service interruption to the mother and increase maternal satisfaction. Effective communication and sufficient time need to be ensured to maintain the relationship and trust between health professional and mothers [1]

High quality health services can be provided through continuity of care activities although it is difficult as it takes quite some time. However, a shift in community needs can reduce the space and needs of health staff. One example of continuity of care is midwifery services in which midwives provide midwifery care from prenatal to postnatal care. The advantage of this service is to minimize the number of health staff, develop good relations, and obtain information or problems experienced by mothers directly[1]

Complications during pregnancy can occur anytime. Those can affect maternal health and fetal well-being. The world health organization has reported that almost 830 women die daily as a result of complications during antenatal period and childbirth. Severe hemorrhage, maternal infections, unsafe abortion, hypertension related to disorders of pregnancy, and medical complications are five main reasons for death during pregnancy. To improve services, it is necessary to identify high-risk pregnancy, the causes and its

complications through quality antenatal. This is very helpful in achieving favorable maternal, obstetric and neonatal outcomes.[2]

Kudus city is known as the cigarette city. Most of the population work as cigarette factory workers. Among them are women in the sub-district of Kaliwungu. There are two public health communities, i.e. Kaliwungu public health community and Sidorekso public health community. Among the two, the bigger public health community is Kaliwungu.

According to the Central Java provincial health office report in 2017, there were 475 maternal mortality death. About 60% of maternal mortality death occurred during the puerperium, 26.32% occurred during pregnancy and 13.68% occurred during delivery. The causes of maternal mortality death were pregnant induce hypertension 32.97%, bleeding 30.37%, circulatory system disorders 12.36%, infections 4.34%, and metabolism disorders 0.87%. [3]

## II. METHOD

### A. *Research Design*

This study is an observational study. Observational is used to evaluate the continuity of care for high-risk pregnancy in public health care Kaliwungu district.

### B. *Population Sample*

The women were recruited from public health service in Kaliwungu district of Kudus city which has over than 1.500 births per year. All risky women were recruited in April 2019 and received continuity of care until the postpartum period. The inclusion criteria were able to speak and read, registered in public health care in Kaliwungu district, in more than 12 completed week gestation, had the KIA book and assessed at obstetric risk.

The samples were 46 risky pregnant women at Public Health Center of Kaliwungu, Kudus chosen through purposive sampling technique and given mentoring by midwives/continuity of care from the second trimester to the postpartum period. The pregnant women were, later on, managed and assessed every time there were physical changes both towards deteriorating conditions and improving conditions.

### A. *Data Collecting and Analysis*

#### Procedural Evaluation

Antenatal care: pregnant women were given assistance of pregnancy during 12 or more gestation weeks. Midwife gave antenatal care once a month or when there was a complaint. There were ten standards received by pregnant women: measurement of body weight and height, measurement of blood pressure, measurement of upper arm circumference, uterine fundal height measurement, administrations of tetanus toxoids immunization, administrations of Ferro sulfate, determinations of fetal presentation and fetal heart rate, counseling, laboratory test and case management.[3]

The intranatal care was done by midwife who gave intranatal care in public health care and referred to hospital when complications occurred.

The postnatal care was given until 40 days. Midwife checked the changes on the women's body, the vital sign, and lochia, and ensured the breastfeeding process. There were six standards for puerperium examination: vital sign measurement, uterine fundal height measurement, vaginal bleeding measurement, breast examinations and ensure of exclusive breastfeeding, communication information and education, and family planning. [3]

The data analysis was done using chi-square test by observing the babies born after the COC program was conducted.

## III. RESULTS

Women who have been recruited in the study are classified among high-risk type of anemia, chronic malnutrition, and others such as hepatitis, heart failure, and prior caesarian section. Chronic malnutrition is greater than anemia and the other complications see table III.

85% of high-risk women have normal delivery and 14.6% have caesarian section, see table IV. 87.8% have normal baby and 12.2% have baby with complication, see table 5. 97.6% have normal postpartum and 2.4% have maternal complication, see the table VI.

The results of this study reveal that pregnant women with risks who obtain mentoring / COC have a different tendency on the babies born, with p value of 0.000

TABLE I. AGE

	Frequency	Percent
More than 35 yearsold	11	26.8
18 – 35 years old	30	73.2

TABLE II. GESTATION

	Frequency	Percent
13 – 24 weeks	35	85.4
25 – 40 weeks	6	73.2

TABLE III. TYPE OF RISK

	frequency	Percent
Anemia	9	22
KEK	17	41.5
Others	15	36.6

TABLE IV. DELIVERY

	frequency	Percent
Pervaginam	35	85.4
SC	6	14.6

TABLE V. BABY

	frequency	Percent
Normal	36	87.8
With complication	5	12.2

TABLE VI. POSTPARTUM

	Frequency	Percent
Normal	30	73.2
With complication	11	26.8

TABLE VII. STATISTICS TEST

Chi-square	2.537a	20.512
Df	2	1
Asymp.sig	.281	.000

<sup>7</sup> Nonparametric test

#### IV. DISCUSSION

Risk pregnancy is complicated condition that requires treatment. In Kaliwungu sub-district, chronic malnutrition is the most common type of risk. The impact of chronic malnutrition for baby is intra uterine, growth retardation, low birth weight. For mother, chronic malnutrition can cause abortus, postpartum hemorrhagic, sub-involution in postpartum period, and breastfeeding disorders.

Although chronic malnutrition can be early detected at the beginning of pregnancy, the results of treatment are sometimes not as expected. This is influenced by several factors such as the level of knowledge of pregnant women, socio-economic, and cultural conditions. There are several families who culturally believe that pregnant women should avoid some foods. In their opinion, some foods, such as fish and vegetables, are believed to be disturbance for the fetus. So, the pregnant women should more selective in eating. The socio-economic condition found is low income. Low income makes a person's purchasing power too low.

Malnutrition is known to increase the risk of poor pregnancy outcomes, including obstructed labor, premature or low birth weight babies and postpartum hemorrhage. Severe anemia during pregnancy is associated with increased maternal mortality. Besides, malnutrition among mothers has an intergenerational effect, with repeating cycles of malnutrition and poverty in the long run. Maternal malnutrition is caused by complex interaction of multitude of factors. Having severe illness, breastfeeding, and having several children below 2 years of age are negatively associated with maternal nutritional status. Meanwhile, higher maternal age and socio-economic status, and household food security have a positive effect. In addition, some social factors, such as marital status, education and income also have an influence. [4]

In this study, the researchers find other risk pregnancy such as heart failure, antepartum bleeding history, prior caesarian section, and being pregnant at the age of more than 35 years old. Through the continuity of care, midwife can detect risk pregnancy early at the beginning of pregnancy. After detected, midwives visit the mother who has the risk pregnancy regularly. When the emergency is found during visits, midwives give the treatment immediately and transfer the mother to the hospital.

As known, antepartum bleeding is related to chronic malnutrition and anemia. Antepartum bleeding can occur at 12 gestation week or more. Further, it can be symptoms of abortus, placenta previa and solucio placenta. The impact of antepartum bleeding is severe both to mothers and babies, such as hypovolemic shock, intrauterine fetal death, circulatory system disorders and maternal death.

Women who have caesarian section history are suggested to deliver in hospital because prior caesarian section can affect the next delivery. These are the risks of vaginal birth after caesarian such as rupture of uterine, hemorrhagic postpartum, and hypovolemic shock.

Anemia, moderate or severe bleeding are complications that often arise. The consequences of anemia imply the need to address it as a priority during immediate postpartum period. Further research is needed regarding the exact period of follow-up of women who are detected to have complications soon after delivery. Women with severe complications are significantly more likely to experience perinatal death. Other studies have also linked obstetric complications with perinatal death because the same complications affect both mother and fetus. Physical symptoms of severe complications are such as pain in the arms and legs, weakness and difficulty with self-care and housework. This symptom is a consequence of severe which affect most women. [5]

According to the health provincial report in 2017, the coverage of complication service was 113.8%; it increased than the coverage of complication service one year earlier. [4] In this study, the researchers find anemia as a maternal complication. Anemia is related to chronic malnutrition that affects prenatal, perinatal and postnatal outcome. The effects during prenatal are abortus, intrauterine growth retardation, low birth weight, congenital abnormalities, and antepartum bleeding. The effect of anemia during perinatal is prolonged labor and the impact for postnatal is postpartum bleeding.

Table IV shows that 85% of high-risk women have normal delivery and 14.6% have caesarian section. The impacts of the continuity of care help reduce complication and admission to the hospital. Every visit, midwife collects the symptoms and writes on maternal health book. When the midwives visit the pregnant women, they detect the emergency symptoms and make decisions for patient safety such as referring to hospital immediately.

Table V shows that 87.8% have normal baby and 12.2% have baby with complication. Table also reveals that 97.6%

have normal postpartum and 2.4% have maternal complication. Complications in pregnancy can be managed and treated to improve the conditions of pregnant women. Collaboration between pregnant women, midwife and obstetrician to treat the high-risk pregnancy helps reduce the risks and improves perinatal outcome.

Green et al. and the other researchers suggest continuity of care to increase women's satisfaction. Perhaps, it is an individual provider approach to care rather than a known care provider that leads to increased satisfaction.[6] Among women with a low risk of medical complications, a midwife increases women's satisfaction with antenatal, intra-partum and postpartum care. Further research can explore the complex issue of the dose of continuity of care that is required to affect women's satisfactions on the care and at the same time ensure the sustainability.[7]

Another study reveals that operative intervention increases with increasing risk score of the mother. It is 82.5% in case of high risk group, whereas it is 38.4% and 15.1% in moderate and low risk groups respectively. Perinatal mortality is exclusively found in high-risk group. Out of the 4 cases of perinatal deaths in high risk group, one is intra uterine death, two are stillbirths and one is early neonatal death; accounting to perinatal mortality rate of 100 per 1,000 live births in the high-risk group. The high-risk group has 30% incidence of birth asphyxia and metabolic acidemia. There is a significant association of poor perinatal outcome and high-risk pregnancies predicted through scoring schedule. The scoring system can be incorporated in the antenatal case records at PHC level, second referral units and urban health post for early detection and appropriate management of high risk pregnancy.[8]

The experience of personal and team continuity of care during pregnancy is significantly higher among women in midwife-led care compared to obstetrician-led care. Experienced continuity of care during pregnancy is moderately correlated to experienced quality of care.[9]

## V. CONCLUSION

The researchers suggest midwives to improve the perinatal outcome for high-risk pregnancy through continuity of care. Although continuity of care requires a lot of time and energy, the results are very good for mothers and the babies. Collaboration between midwife and obstetrician to treat high-risk pregnancy helps reduce the risks and improves the perinatal outcome. Continuity of care reduces severe complication during pregnancy and postpartum.

## ACKNOWLEDGMENT

The researchers would like to thank Muhammadiyah University of Kudus, Research and Development Department in Kudus, and Kaliwungu Public Health Center for both material and financial support in the completion of this study.

## REFERENCES

- [1] J. Bowers, H. Cheyne, and G. Mould, "Continuity Of Care in Community Midwifery," *J. Heal. Care Manag.*, 2014.
- [2] M. Majella, G. Sarveswaran, and et all, *A Longitudinal Study on Highrisk Pregnancy and its Outcome Among Antenatal Women Attending Rural Primary Health Centre in Puducherry South India.* 2019.
- [3] Dinas Kesehatan Provinsi Jawa Tengah, *Profil Kesehatan Provinsi Jawa Tengah tahun 2017.* Jawa Tengah: Kemenkes RI, 2017.
- [4] B. Gebre and et all, "Determinants of Malnutrition Among Pregnant and Lactating Women Under Humanitarian Setting in Euthopia," *BMC Nutr.*, vol. 4, no. 11, 2018.
- [5] K. Lyengar, R. Yadaf, and S. Sen, "Concequences of Maternal Complications in a Women's Lives in the First Postpartum Year: a Prospective Cohort Study," *J. Heal. Popul Nutr.*, vol. 30, no. 2, pp. 226–240, 2012.
- [6] J. Green, M. Renfrew, and P. Curtis, "Continuity of Carer: What Matters to Women? A Review of the Evidence," *J. Midwifery*, vol. 16, no. 3, pp. 186–96, 2000.
- [7] F. Della and et all, "Continuity of Care by a Primary Midwife (Caseload Midfery) Increase Women's Satisfaction with Antenatal, Intrapartum, and Postpartum Care: result from the COSMOS randomized controlled trial," *BMC Pregnancy Childbirth*, 2016.
- [8] V. Kolluru and A. Reddy, "Study of Highrisk Scoring in Pregnancy and Perinatal Outcome," *Indian J. Obstet. Ginaecology Res.*, vol. 3, no. 4, pp. 407–409, 2016.
- [9] H. Perdok, C. J. Verhoeven, and A. D. Jonge, "Continuity of Care is an Important and Distinct Aspect of Chilbirth Experience," *BMC Pregnancy Childbirth*, 2018.