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THE ROLE OF CONTINUITY OF CARE-BASED ASSISTANCE IN PREGNANCY WITH PRE-GESTATIONAL DIABETES MELLITUS AND TUBERCULOSIS: CASE REPORT

Ari Tricahyanti[1], Euvanggelia Dwilda Ferdinandus[2], Ratna Dwi Jayanti[3]
aritricahyanti2003@gmail.com[1]
Universitas Airlangga

ABSTRACT

Background: Pre-gestational diabetes mellitus and Tuberculosis (TB) are conditions that can increase the risk of complications during pregnancy and contribute to higher maternal mortality rates. Pregnant women with pre-gestational diabetes mellitus have a higher risk of developing preeclampsia, infections, and delivery complications, while Tuberculosis (TB) can cause anemia, preterm birth, low birth weight, fetal growth restriction, neonatal asphyxia, and even increase the risk of maternal and infant death if not properly managed. Therefore, continuous support is required to minimize these risks. Continuity of Care (CoC) support has significant advantages compared to conventional support because it is continuous, comprehensive, and patient-centered, thereby improving the quality of care and enhancing health outcomes for mothers and babies. The purpose of this study is to demonstrate the role of Continuity of Care (CoC) support for pregnant women with pre-gestational diabetes mellitus and Tuberculosis (TB). Case Report: Continuity of Care (CoC)-based assistance was provided to a 29-year-old mother starting from 8–9 weeks of pregnancy during the 4th month of Tuberculosis (TB) treatment. The mother had a KSPR score of 14, which included being pregnant with pregestational diabetes mellitus, Tuberculosis (TB), height less than 145 cm, and a family history of Tuberculosis (TB). Since receiving assistance in the form of routine check-ups and monitoring at the community health center, referral assistance to the hospital, provision of IEC (Information, Education, and Communication), psychological support, and utilization of telehealth, the mother has shown increased knowledge, compliance with Antenatal Care (ANC) examinations, and improvements in health-related behavior. Conclusion: Continuity of Care (CoC) assistance plays a role in improving the health quality of pregnant women with high risks such as pregestational diabetes mellitus and Tuberculosis (TB), as well as helping to prevent complications during pregnancy.

Keywords: *Continuity Of Care, Pregnant Women, Pre-Gestational Diabetes Mellitus, Tuberculosis.*

INTRODUCTION

Pre-gestational diabetes mellitus is a condition in which a woman has experienced glucose metabolism disorders before pregnancy, characterized by increased blood sugar levels due to impaired insulin secretion, insulin action, or both. According to the Ministry of Health (Kemenkes), diabetes mellitus is a chronic disease that occurs when the pancreas does not produce enough insulin or the body cannot use insulin effectively, resulting in hyperglycemia (Kemenkes, 2020).

Pregnancy with pregestational diabetes mellitus carries various risks of complications, both during pregnancy, childbirth, and the postpartum period. In mothers, this condition can increase the risk of preeclampsia, infections, as well as delivery interventions such as cesarean section. Meanwhile, in the fetus, it can cause macrosomia, congenital abnormalities, neonatal hypoglycemia, and even perinatal death (Ministry of Health, 2020). Therefore, managing diabetes mellitus during pregnancy requires strict monitoring and optimal blood sugar control to prevent these complications (ADA, 2022).

In addition to pre-gestational diabetes mellitus, Tuberculosis (TB) is also one of the health problems that still remains a global concern, especially among vulnerable groups including pregnant women. Tuberculosis is an infectious disease caused by the bacterium Mycobacterium tuberculosis, which generally attacks the lungs and can be transmitted through droplets when the patient coughs or sneezes (Ministry of Health, 2021). According to the World Health Organization (WHO), Indonesia is among the countries with the highest TB burden in the world, so the risk of exposure within the family environment is still quite high (WHO, 2023).

During pregnancy, TB infection can have adverse effects on both the mother and the fetus. Pregnant women with TB are at risk of anemia, preterm labor, and other complications. Meanwhile, the fetus can experience low birth weight (LBW), congenital infections, and an increased risk of perinatal death (Ministry of Health, 2021). This condition becomes even more complex if it occurs alongside other chronic diseases such as diabetes mellitus, as it can reduce immunity and worsen the clinical condition of the pregnant woman.

The World Health Organization (WHO) reports that the prevalence of Diabetes Mellitus continues to increase globally, including among women of reproductive age. It is estimated that around 16% of pregnancies worldwide experience hyperglycemia disorders, whether caused by pregestational diabetes or gestational diabetes (WHO, 2023). Meanwhile, TB remains one of the leading causes of death from infectious diseases, with millions of new cases every year. The combination of these two conditions during pregnancy presents a unique challenge in maternal healthcare services because it increases the risk of morbidity and mortality for both mothers and babies.

Given the various risks of complications in pregnant women with pregestational diabetes mellitus and Tuberculosis (TB), comprehensive efforts are needed in their management. One approach that can be taken is through continuous support for pregnant women. Support for pregnant women includes providing education, monitoring the health condition of the mother and fetus, and early detection of pregnancy risk factors to reduce the rate of complications and maternal mortality (Sari et al., 2024).

One form of accompaniment that is currently widely developed is Continuity of Care (CoC). Continuity of Care (CoC) in midwifery is a series of continuous services from pregnancy, childbirth, postpartum, newborn care, to family planning that focuses on the individual's needs comprehensively (Ropitasari and Setyo, 2024). In this program, healthcare workers and midwifery students actively participate in accompanying pregnant women directly or indirectly through home visits and telehealth.

The benefits of Continuity of Care (CoC) assistance have been widely proven in various studies. The implementation of continuous care has been shown to improve the quality of midwifery services, reduce the rate of childbirth complications, and increase maternal satisfaction with healthcare services (Gamar, Eka, and Wardita, 2023). In addition, CoC assistance can also improve mothers' knowledge, attitudes, and behaviors in maintaining health during pregnancy, thereby supporting better pregnancy outcomes (Waluyo et al., 2024).

With the presence of high-risk pregnancy conditions such as pre-gestational diabetes mellitus and Tuberculosis (TB), continuous support becomes very important to ensure that the mother receives optimal care and is able to prevent complications.

Based on this background, the writing of this case report aims to show the role of Continuity of Care (CoC) accompaniment for pregnant women with pre-gestational diabetes mellitus and Tuberculosis (TB) in an effort to improve the health of the mother and fetus and prevent complications during pregnancy, delivery, and the postpartum period.

RESULTS AND RESEARCH

Pre-gestational diabetes mellitus and Tuberculosis (TB) are two comorbid conditions that significantly increase the risk of maternal and neonatal complications, as well as contribute to the Maternal Mortality Rate (MMR). In Indonesia, based on data from the Maternal Perinatal Death Notification (MPDN), the MMR increased from 4,005 cases in 2022 to 4,129 cases in 2023 (Naurah et al., 2024). This empirical fact shows that the health care system still faces major challenges in detecting and managing pregnancies with chronic diseases, where the high numbers reflect a gap in service continuity due to care that is still fragmented between primary care and referral services.

In this case, a primigravida mother (G1P0A0) has been accompanied since 8–9 weeks of gestation (First Trimester). The mother has a KSPR (Poedji Rochjati Score Card) score of 14, which categorizes her in the Very High-Risk Pregnancy (VHRP) group due to pre-gestational diabetes mellitus, a history of treatment for advanced-phase TB (4th month), and a height of less than 145 cm. The complexity of this case is increased by psychological barriers in the form of deep trauma in visiting the hospital, as the mother’s biological father recently passed away at the facility. Addressing psychosocial obstacles became the initial priority in support during the First Trimester. Companions focus on providing emotional support, motivation, as well as Communication, Information, and Education (CIE) about the impact of diabetes mellitus and TB on pregnancy. A continuous interpersonal approach successfully reduces maternal anxiety, enabling mothers to be willing to attend regular hospital check-ups accompanied by a companion. This step aligns with the theory that psychological support in early pregnancy effectively increases patient compliance with secondary healthcare services (Syafitri, Kusumastuti, and Novita, 2023). Addressing the psychological aspects of pregnant women is often neglected in standard antenatal examinations, which tend to focus solely on physical indicators, even though mental barriers such as emotional trauma can become a major obstacle preventing mothers from accessing referral health facilities.

The success of CoC care in this case is also demonstrated through the effectiveness of interprofessional collaboration and the involvement of the family (support system). To ensure adherence to TB medication with 2 months remaining, the companion collaborates with health center staff using a checklist instrument for routine compliance with taking Anti-Tuberculosis Drugs (OAT) at the scheduled time each day. In addition, to maintain blood sugar stability, the companion involves the husband and family to monitor daily self-administered insulin injections, as well as accompany the mother during check-ups at the Internal Medicine Clinic of the hospital. This active collaboration produced optimal results,

where the mother's TB treatment was declared complete in the 6th month with a negative sputum examination, along with blood sugar levels that remained stable until the end of pregnancy. This emphasizes that family involvement has a positive correlation in preventing obstetric complications in mothers with comorbidities (Mansoben and Gurning, 2022). Chronic disease management during pregnancy cannot be placed solely on the pregnant mother because long-term therapeutic adherence, such as daily insulin injections and strict OAT consumption, heavily depends on the presence of family as medication supervisors who effectively minimize the risk of medical negligence.

Throughout the mentoring process, IEC (Information, Education, and Communication) was provided gradually and continuously, adjusted to the mother's needs in each trimester. In the first trimester, education focused on introducing early pregnancy danger signs, providing emotional support, motivating the completion of OAT, continuing insulin therapy, and limiting low-sugar and low-salt nutrition, including education about the side effects of consuming Iron Supplement Tablets (TTD). Entering the second trimester, the focus shifted to nutrition education (vegetable consumption), physical activity, and routine check-ups. When complaints of back pain due to uterine enlargement were found, the mentor provided IEC that this was physiological and taught comfort measures such as warm water compresses, as well as suggesting prenatal exercise or yoga. In addition, when the fetus was detected to be in a breech position at 19–20 weeks of gestation, the mentor provided IEC on the knee-chest position to help change the fetal presentation. In the third trimester, education is emphasized on preparation for childbirth, elimination patterns (managing constipation), nutrition, and danger signs of the third trimester. Since the fetus remains in a breech position until 36 weeks of gestation, the companion intensifies education on the knee-chest position by sending tutorial videos as a visual guide for the mother at home, while also providing mental reinforcement to keep the mother calm in facing the possibility of a cesarean delivery. Good knowledge from the results of regular education in theory will encourage the mother to independently undertake efforts to prevent complications (Panjaitan et al., 2022). Adaptive health education methods that utilize technology have been proven to be far more effective in increasing patient independence in addressing physiological complaints as well as building rational mental readiness in facing operative procedures.

The final evaluation (outcome) of this CoC mentoring showed satisfactory results. The delivery was performed via Caesarean Section (CS) based on composite medical indications: pregestational diabetes mellitus, premature rupture of membranes (PROM), and breech presentation. Although gestational diabetes mellitus theoretically carries a high risk of causing macrosomia in newborns (Ministry of Health, 2020), the success in maintaining the baby's weight within the normal range (2,890 grams) without developing macrosomia is concrete evidence that strict and disciplined glycemic control during pregnancy was successfully achieved. The neonate experienced postnatal hypoglycemia—a common clinical risk in babies born to mothers with diabetes due to fetal hyperinsulinemia—requiring intensive care in the NICU for 3 days. Thanks to early detection and prompt treatment, the baby was able to go home in healthy condition. The puerperium period was observed to proceed well without secondary complications. The SC operative wound dried well by the 14th day, and complaints of spotting two months postpartum due to IUD use were successfully managed through education. The baby's growth and development also progressed optimally with exclusive breastfeeding on demand until the age of 5 months. Antenatal compliance facilitated by guidance proved to have a linear relationship with a reduced risk of more severe pregnancy complications (Fikayanti et al., 2024). Although the occurrence of neonatal hypoglycemia is a pathophysiological consequence that is difficult to completely avoid, rapid management in the NICU demonstrated that referral readiness

planned from the outset through the P4K program successfully saved the baby from the risk of permanent neurological damage.

Overall, this case study reaffirms that continuous accompaniment allows for the early detection of risk factors and appropriate interventions, thereby preventing the occurrence of more severe complications (Ropitasari and Setyo, 2024). This accompaniment-based Continuity of Care (CoC) model is not merely a fulfillment of duties, but a highly effective clinical intervention because through holistic care—which addresses psychological aspects, family environment, and referral system readiness—the chain of complications in high-risk pregnancies has been proven to be broken, resulting in optimal health outcomes for both mother and child.

Support for pregnant women is not only provided by healthcare professionals, but can also be provided by companions through the Continuity of Care (CoC) program. In this support, mothers receive direct care such as home visits and accompaniment during ANC check-ups, as well as indirect care through telehealth in the form of communication via chat or phone. This support includes education on pregnancy, childbirth, postpartum, breastfeeding, as well as specific education related to conditions experienced by the mother such as Diabetes Mellitus and TB prevention.

The education provided during the guidance has been proven to increase mothers' knowledge about their pregnancy conditions. After being given education about Diabetes Mellitus and TB, mothers became more vigilant and made efforts to maintain a healthy lifestyle. This is in accordance with the theory that pregnant mothers' knowledge has a significant relationship with health behavior during pregnancy (Panjaitan et al., 2022). Good knowledge will encourage mothers to independently take preventive measures against complications.

In addition to education, the mother is also accompanied to undergo Antenatal Care (ANC) examinations regularly. ANC examinations are conducted at least 6 times during pregnancy according to service standards, aiming to monitor the condition of the mother and fetus and to detect complications early (Ministry of Health, 2020). With ANC assistance, the mother becomes more consistent in undergoing examinations, so the pregnancy condition can be well monitored. This aligns with research showing that ANC compliance is associated with a reduced risk of pregnancy complications (Fikayanti et al., 2024).

In this CoC assistance, the psychological aspect of the mother also becomes an important concern. The companion provides support in the form of motivation and appreciation so that the mother feels more confident during her pregnancy. Mothers who receive psychological support tend to have better compliance with health recommendations and are better able to manage stress during pregnancy. This aligns with the theory that motivation is an important factor in shaping the health behavior of pregnant women (Syafitri, Kusumastuti and Novita, 2023).

In addition, family involvement in companionship also has a positive impact on the mother's condition. Support from the husband and family helps the mother meet both physical and psychological needs during pregnancy. Research shows that family support is significantly related to the prevention of pregnancy complications (Mansoben and Gurning, 2022). In this case, the husband and family showed full support, so the mother felt calmer and more comfortable during her pregnancy.

Companions also collaborate with healthcare workers and cadres in monitoring the condition of mothers. The role of cadres is very important in assisting the monitoring of mothers' health in the community as well as providing additional support such as education and monitoring the condition of pregnant mothers (Maigoda et al., 2022). This collaboration helps improve the quality of services and ensures that mothers receive optimal care.

The benefits of Continuity of Care (CoC) accompaniment in this case are seen from the increased knowledge of the mother, adherence to ANC check-ups, and the mother's readiness to face childbirth. Continuous accompaniment allows for early detection of risk factors and appropriate interventions, thus preventing the occurrence of more severe complications (Ropitasari and Setyo, 2024).

During the accompaniment process, the mother did not experience severe complications despite having a high-risk factor based on the KSPR score and medical history. This condition shows that accompaniment carried out optimally can help the mother undergo pregnancy well. In addition, monitoring was also conducted on the condition of the fetus to ensure that growth and development proceeded normally.

Thus, it can be concluded that Continuity of Care (CoC) accompaniment plays an important role in improving the health quality of pregnant women with high-risk conditions such as pregestational diabetes mellitus and tuberculosis. This accompaniment not only focuses on physical aspects but also includes psychological and social aspects, thereby supporting the success of pregnancy, childbirth, and the health of the baby.

CONCLUSION

Based on the results of the assistance that has been provided, pregnant women with pregestational diabetes mellitus and Tuberculosis (TB) are able to undergo pregnancy in good condition without significant complications during the pregnancy period. The mother shows an increase in knowledge, compliance with Antenatal Care (ANC) examinations, as well as better health behavior changes after receiving assistance.

Assistance based on Continuity of Care (CoC) contributes to improving the mother's readiness physically, psychologically, and socially, including in the prevention of complications and the management of existing risk factors. In addition, support from the husband, family, as well as collaboration with health workers and community health volunteers also plays a role in the success of the assistance.

Thus, it can be concluded that accompaniment in Continuity of Care (CoC) plays an important role in improving the health quality of pregnant women with high-risk conditions such as pregestational diabetes mellitus and tuberculosis. However, this success is not determined solely by the accompaniment, but is also influenced by the involvement of various parties as well as the awareness and commitment of the mother in maintaining her health during pregnancy.

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